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Climate change impact in different sectors

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Introduction





Introduction

- Climate change is one of the most pressing issues of our time, and its impact is being felt across different sectors. According to the Intergovernmental Panel on Climate Change (IPCC), global temperatures have risen by 1°C since pre-industrial times, and are projected to rise by another 1.5°C to 2°C by the end of this century. This may not seem like a significant increase, but it has far-reaching consequences for agriculture, water resources, health, biodiversity, energy, infrastructure, and the economy.
- Extreme weather events such as droughts, floods, and storms can also have a devastating impact on agriculture and water resources. Climate change can also exacerbate health problems such as the spread of disease, heat-related illnesses, and air pollution. In addition, it can lead to the loss of wildlife and habitats, and threaten global biodiversity. These impacts have serious implications for our infrastructure and economy, and require urgent action.



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Impacts





Impact on Biodiversity

- Climate change is having a profound impact on biodiversity, with changes in ecosystems, species distribution, and extinction rates occurring at an unprecedented rate. As temperatures rise, many species are struggling to adapt to changing conditions, leading to declines in population and even extinction. For example, coral reefs are particularly vulnerable to warming waters, with many already experiencing bleaching events that can lead to their death.
- Habitats are also being affected by climate change, with some areas becoming unsuitable for certain species and others becoming more suitable for invasive species. This can lead to changes in the composition of ecosystems and the loss of important ecological functions. For instance, as the Arctic warms, polar bears are losing their sea ice habitat, forcing them to spend more time on land, where they have less access to food and are more vulnerable to predation.

Impact on Water Resources

- Climate change is having a significant impact on water resources, with changes in precipitation patterns and melting glaciers affecting water availability, quality, and management. As temperatures rise, snow and ice are melting faster, leading to increased river flows and flooding in some areas, while other regions experience more frequent droughts and water scarcity.
- The changing climate also affects water quality, as warmer waters can lead to harmful algal blooms and the spread of waterborne diseases. Additionally, changes in precipitation patterns can affect water management, as traditional methods of water storage and distribution may no longer be effective. For example, in some regions, increased rainfall intensity has led to more stormwater runoff, overwhelming sewage systems and contaminating water supplies.

Impacts on Agriculture

- Climate change is having a significant impact on agriculture, with changes in temperature, rainfall, and extreme weather events affecting crop yields, food security, and global food prices. Rising temperatures can lead to more frequent heat waves, droughts, and wildfires, which can damage crops and reduce yields. Changes in precipitation patterns can also affect crop growth, with too little or too much rain leading to lower yields or crop failure.
- In addition to the direct impact on crop production, climate change can also affect food security and global food prices. As extreme weather events become more frequent and severe, they can disrupt supply chains and distribution networks, leading to shortages and price spikes. This can have a disproportionate impact on vulnerable populations who are already struggling with food insecurity.



Impact on Energy

- Climate change has a significant impact on energy systems, affecting both the demand for and supply of energy. Changes in temperature, precipitation patterns, and extreme weather events can disrupt energy infrastructure, leading to power outages and increased costs. For example, hurricanes and wildfires have damaged oil and gas production facilities, causing supply shortages and price spikes.
- Renewable energy sources, such as wind and solar power, are also affected by climate change. Changes in weather patterns can reduce the availability and reliability of these energy sources, making it more difficult to integrate them into the grid. Additionally, changes in water availability can impact hydropower generation, which relies on consistent water flow.



Impact on Economy

- Climate change is having a significant impact on the global economy, with changes in GDP, trade, and employment being felt across different sectors. For example, agriculture is being affected by changes in temperature and rainfall patterns, leading to lower crop yields and higher food prices. The energy sector is also feeling the effects of climate change, with increased demand for renewable energy sources and decreased reliance on fossil fuels. In addition, the tourism industry is being impacted by changing weather patterns, which can affect travel patterns and destinations.
- The economic impact of climate change is not limited to these sectors, however. Changes in precipitation patterns and sea level rise can also lead to infrastructure damage and increased costs for transportation and building maintenance. Furthermore, extreme weather events such as hurricanes and floods can cause widespread economic damage and disrupt supply chains. It is clear that taking action on climate change is not only important for environmental reasons, but also for the health and stability of the global economy.



Impact on Infrastructure

- Climate change is having a profound impact on our infrastructure, from roads and bridges to airports and ports. Rising sea levels are threatening coastal cities and low-lying areas, while extreme weather events are causing damage to buildings and transportation systems. For example, Hurricane Katrina caused more than \$100 billion in damage to New Orleans and the surrounding area, including damage to levees, roads, and buildings.
- In addition to physical damage, infrastructure is also vulnerable to disruption due to power outages, water shortages, and other impacts of climate change. For example, heat waves can cause power grids to fail, leading to blackouts and disruptions to transportation systems. These disruptions can have far-reaching economic and social consequences, affecting everything from supply chains to public health.



Case Study



Germany's Climate Profile

- Germany, located in central Europe, has a temperate climate with mild winters and cool summers. Its topography is characterized by lowlands in the north and highlands in the south, including the Alps. The country is divided into five climate zones, ranging from maritime in the northwest to continental in the east.
- Germany's vulnerability to climate change is evident in its key sectors, including agriculture, water resources, health, biodiversity, energy, and infrastructure. Changes in temperature and precipitation patterns, as well as extreme weather events, have already impacted crop yields, river flow, and transportation systems. It is crucial for Germany to take action to mitigate and adapt to the effects of climate change.



Germany's Economic Consequences

- Climate change is having significant economic consequences in Germany. The costs of adapting to and mitigating the impacts of climate change are substantial, with estimates suggesting that they could reach billions of euros per year. In addition, loss of productivity due to extreme weather events, such as heatwaves and floods, can also have a significant economic impact. Furthermore, damage to infrastructure, including buildings, roads, and bridges, can result in costly repairs and disruptions to transportation and commerce.
- To illustrate the economic consequences of climate change in Germany, the presentation includes several charts and graphs. These visual aids show the costs of adaptation and mitigation measures, the economic impact of extreme weather events, and the cost of repairing damage to infrastructure. Together, they provide a comprehensive picture of the economic challenges facing Germany as it works to address the impacts of climate change.

Germany's Policy Frameworks

- Germany has implemented several policy frameworks to address climate change, including the Climate Action Plan 2050 and the Renewable Energy Sources Act. These policies aim to reduce greenhouse gas emissions, increase the share of renewable energy sources in the energy mix, and promote energy efficiency measures. The Climate Action Plan 2050 sets long-term goals for emissions reduction, with a target of reducing emissions by 80-95% by 2050.
- Policy plays a crucial role in driving climate action, as it provides a framework for businesses and individuals to make sustainable choices. By implementing policies that incentivize clean energy and discourage fossil fuel use, Germany is leading the way in transitioning to a low-carbon economy. However, effective policy implementation requires collaboration between government, industry, and civil society, and ongoing monitoring and evaluation to ensure progress towards climate goals.



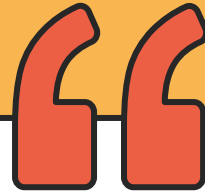
International Agreements

Kyoto Protocol

- The Paris Agreement and the Kyoto Protocol are two of the most significant international agreements developed to address climate change. The Kyoto Protocol, adopted in 1997, was the first global agreement that required countries to reduce their greenhouse gas emissions. It set binding targets for industrialized countries, but did not include developing countries.
- The impact of these agreements on global emissions and climate action has been significant. The Kyoto Protocol led to a reduction in emissions from industrialized countries, but its impact was limited due to the lack of participation from developing countries.

Paris Agreement

- The Paris Agreement, adopted in 2015, is a more comprehensive agreement that includes all countries and aims to limit global temperature rise to well below 2 degrees Celsius above pre-industrial levels.
- The Paris Agreement, on the other hand, has been signed by nearly every country in the world and has led to increased commitments to reduce emissions and invest in renewable energy. However, there are challenges in implementing these agreements and ensuring compliance from all countries.



Challenges

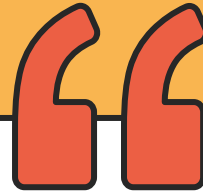
Climate change is a complex issue that presents numerous challenges. One of the biggest obstacles to addressing climate change is political barriers. Many countries are reluctant to take action on climate change due to concerns about economic growth and competitiveness. In addition, there is often a lack of political will to make the necessary changes. Another challenge is economic barriers. The transition to a low-carbon economy requires significant investments in renewable energy and energy efficiency. These investments can be difficult to finance, particularly in developing countries where resources are limited. Additionally, there may be resistance from industries that rely on fossil fuels for their livelihoods.



“ Best Practices

One of the best practices for addressing climate change is reducing greenhouse gas emissions. This can be achieved through a variety of methods, such as transitioning to renewable energy sources, improving energy efficiency in buildings and transportation, and implementing policies that encourage sustainable practices.

Another best practice is developing renewable energy sources. This includes solar, wind, hydroelectric, and geothermal energy. These sources are becoming increasingly cost-effective and efficient, making them viable alternatives to fossil fuels. For example, Costa Rica has been able to generate 98% of its electricity from renewable sources for several months at a time, demonstrating the feasibility of a fully renewable energy system.



Conclusion

In conclusion, it is clear that climate change has far-reaching impacts on various sectors, including agriculture, water resources, health, biodiversity, energy, infrastructure, and the economy. The evidence presented in this presentation highlights the urgent need for action to mitigate and adapt to the effects of climate change.

We must come together as a global community to address this critical issue. It is not just the responsibility of governments and policymakers, but also individuals, businesses, and organizations. We can all take action by reducing our carbon footprint, supporting renewable energy sources, and advocating for climate policies. Let us work towards a sustainable future for ourselves and future generations.

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Thank You

