

A Comparative Analysis on the Adaptation to Climate Change in Developing and Developed Nations

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Abstract

Climate change is a pressing issue that has been affecting nations around the world. Developing nations are facing the greatest challenges due to their limited resources and technological capabilities, while developed nations have more resources to be able to adapt to the changing climate. This paper seeks to explore how developing and developed nations are adapting to climate change and what factors are contributing to the differences between them. It will compare and contrast the approaches being taken by each group, and discuss the implications of these differences for both the present and future. Additionally, it will discuss possible solutions for both groups of nations in order to better prepare for and adapt to the changing environment.

Keywords

Climate change, climate-smart agriculture, limited resources, large-scale adaptation measures.

INTRODUCTION

Climate change is a global challenge that affects both developed and developing nations. While both types of nations are facing the consequences of climate change, their adaptation strategies may differ. Developed nations have the financial and technological resources to invest in adaptation measures while developing nations often lack these resources and are more vulnerable to the impacts of climate change. This paper will conduct a comparative analysis of the adaptation strategies employed by developed and developing nations in response to climate change. The emphasis will be on the differences in the strategies employed by the two nations, as well as the successes and failures of the strategies. Ultimately, this paper will seek to determine whether developed or developing nations are better equipped to adapt to climate change.

Climate change.

The effectiveness of the adaptation strategies can vary significantly between developed and developing nations. Developed countries are more likely to have access to resources and the ability to develop more sophisticated adaptation strategies, such as the use of advanced technologies and the implementation of large-scale adaptation measures. Developing nations, on the other hand, are more likely to rely on lower-cost and more basic adaptation strategies, such as the use of traditional farming practices and the implementation of small-scale adaptation measures.

DEFINITION OF DEVELOPED AND DEVELOPING NATIONS

Climate change has become an important issue in today's world. It has been known to cause various effects on different nations. This paper will be looking at the adaptation of climate change in developed and developing nations. It will focus on the differences in adaptation strategies, the effectiveness of adaptation strategies and the economic impact of adaptation strategies [20]. It will also look at the potential factors that can affect the ability of a country to adapt to climate change. This paper will compare and contrast the adaptation strategies used by both developed and developing nations in order to assess the differences between them.

Mitigation	Adaptation
Reducing CHG emissions	Reducing vulnerability
Long term focus on the avoidance of future impacts	Starts with the focus on current variability
Global scale cross sectoral effort	Local scale cross sectoral effort
Local national collaboration	National/ Global collaboration

Table 1: Mitigation and adaptation of climate change
(Source: made by the author)

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adapt to climate change. This paper will compare and contrast the adaptation strategies used by both developed and developing nations in order to assess the differences between them.

Adaptation strategies

Developed nations are better equipped to adapt to climate change and have better access to resources. These countries tend to have more resources available to them such as finance and technology which can be used to implement adaptation strategies. These strategies may include investment in renewable energy sources, changes in infrastructure, and the implementation of climate-smart agriculture [21]. Developed nations are also more likely to have access to advanced technologies and research which can be used to improve their understanding of climate change and its impacts.

Developing nations, on the other hand, tend to have less resources available and fewer options for adaptation strategies. These countries are at a greater risk of being affected by climate change and, as a result, have to take a

more proactive approach to adaptation. Developing countries often focus on adaptation strategies such as early warning systems, improved infrastructure, and improved crop varieties in order to reduce their vulnerability to

Economic impact

The economic impact of climate change adaptation strategies can vary significantly between developed and developing nations. Developed countries are more likely to have the resources available to implement more expensive adaptation strategies, such as the use of advanced technologies [22]. This can lead to higher economic costs in the short term, but can also lead to long-term benefits, such as increased economic growth and improved standards of living. Developing countries, on the other hand, are more likely to be limited in their resources and may have to rely on lower-cost and more basic adaptation strategies. This can lead to limited economic benefits in the short term, but can also lead to long-term benefits, such as increased food security and improved infrastructure.

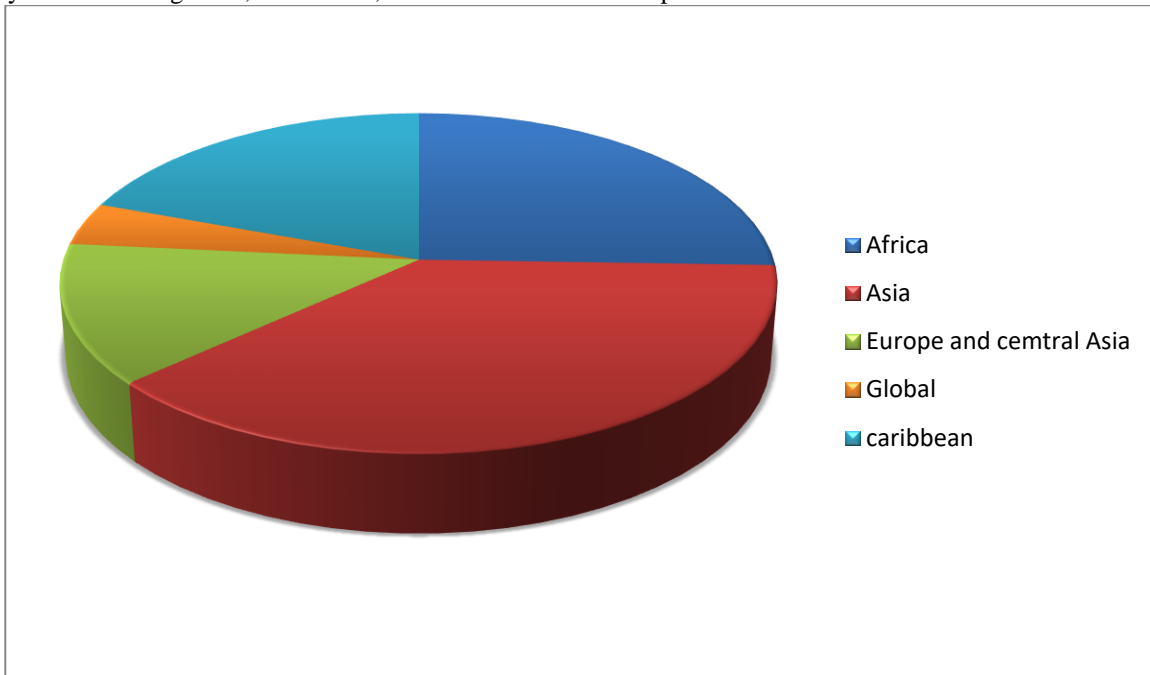


Figure 1: Direct and indirect impact of climate change
(Source: made by the author)

Potential factors

There are various potential factors that can affect the ability of a country to adapt to climate change. These factors include the availability of resources, the economic situation of the country, the level of education and technical expertise of the population, and the political stability of the country. Developed countries tend to have more resources available and are more likely to have higher levels of technical expertise and education. This can lead to more effective adaptation strategies and better economic outcomes in the long run. Developed countries also tend to be more politically stable and therefore have better access to resources for adaptation [23]. Developing countries, on the other hand,

tend to have fewer resources available and the population may be less educated and have lower levels of technical expertise. This can lead to poorer economic outcomes in the long run and may limit the ability of the country to implement effective adaptation strategies.

CAUSES OF CLIMATE CHANGE

Climate change is caused by the release of greenhouse gases, such as carbon dioxide, into the atmosphere. These gases trap heat and cause the planet's temperature to rise. The main sources of these gases are burning of fossil fuels, deforestation, and agricultural activities.

Adaptation to Climate Change in Developing Nations

Developing nations are particularly vulnerable to the impacts of climate change. They often lack the resources to respond to the increased risks posed by rising temperatures, extreme weather events, and sea-level rise. These nations are also more reliant on activities such as agriculture, which are particularly vulnerable to the impacts of climate change. As a result, developing nations must invest in adaptation strategies to mitigate the impacts of climate change [24]. These strategies include increasing access to renewable energy sources, improving infrastructure to withstand extreme weather events, and protecting agricultural land from sea-level rise.

Sector	Direct Impacts	Indirect impacts
Built Environment: Construction, civil engineering	Energy costs External fabric of buildings Structural integrity	Climate driven standards and regulations Changing consumers awareness
Infrastructures industries Energy, water, Telecommunication	Structural integrity, Operations and capacity	Changing average an peak demand

Table 2: Total climate change fund financing by region
(Source: made by the author)

Adaptation to Climate Change in Developed Nations

Developed nations have more resources to respond to climate change. They can invest in adaptation strategies such as improving infrastructure to withstand extreme weather events, expanding renewable energy sources, and investing in carbon reduction strategies. They can also invest in research and development to develop new technologies and strategies to mitigate the impacts of climate change. Additionally, developed nations can use their influence to encourage other countries to take action on climate change.

ADAPTATION STRATEGIES FOR DEVELOPING NATIONS

Developing nations are particularly vulnerable to the effects of climate change, and they often lack the resources needed to address these issues. To address this, developing nations must implement adaptation strategies that are tailored to their unique climate, economic, and social contexts. Some of the key adaptation strategies that should be considered include:

- Sustainable land management: Sustainable land management practices can help reduce the impacts of climate change by conserving soil, water, and vegetation. This can include implementing agroforestry systems, promoting conservation agriculture, and reducing deforestation.
- Improved water management: Improved water management practices can help reduce the impacts

of climate change by reducing water scarcity and improving water quality [25]. This can include implementing rainwater harvesting systems, improving irrigation efficiency, and promoting water conservation.

- Climate-resilient infrastructure: Climate-resilient infrastructure can help reduce the impacts of climate change by protecting critical infrastructure from extreme weather events and sea-level rise. This can include building sea walls, levees, and other flood-control structures, as well as developing resilient energy systems.
- Risk management: Risk management can help reduce the impacts of climate change by reducing the risk of extreme weather events. This can include early warning systems, improved forecasting, and developing resilient communities.

Developing nations are faced with a greater challenge when it comes to adapting to the changes in climate [1]. These nations often lack the resources and infrastructure needed to effectively implement adaptation strategies. However, there are several actions that these nations can take to better prepare for the impacts of climate change. The most important step is to build resilience by increasing investments in infrastructure and resources that can withstand extreme weather events.

This includes improved early warning systems and emergency response plans, as well as strengthening water management systems and building coastal defences. Additionally, developing nations should focus on developing sustainable development strategies that are based on the principles of adaptation, mitigation and resilience. This includes protecting ecosystems and diversifying livelihoods to reduce vulnerability and dependence on climate-sensitive resources [2]. Furthermore, these nations should strive to transition to a green economy, where renewable energy sources are prioritized and carbon emissions are reduced.

Developed nations also face challenges when adapting to climate change. However, they typically have more resources and infrastructure available to them. This means that they can more effectively implement adaptation strategies. One of the most important steps is to invest in infrastructure and resources that are resilient to extreme weather events, such as improved early warning systems, emergency response plans, and coastal defences. Additionally, developed nations should focus on developing sustainable development strategies that are based on the principles of adaptation, mitigation and resilience [28]. This includes protecting ecosystems and diversifying livelihoods to reduce vulnerability and dependence on climate-sensitive resources.

Furthermore, these nations should strive to transition to a green economy, where renewable energy sources are prioritized and carbon emissions are reduced [3]. Overall, both developing and developed nations need to take action to better prepare for the impacts of climate change. By investing in infrastructure and resources that are resilient to extreme

weather events, diversifying livelihoods to reduce vulnerability and transitioning to a green economy, both types of nations can effectively adapt to the changing climate.

Developing nations are particularly vulnerable to the impacts of climate change due to their limited resources and lack of infrastructure. In order to respond and adapt to climate change, developing nations must pursue strategies that are both equitable and sustainable. This can involve the implementation of resilient infrastructure, the promotion of renewable energy sources, and the adoption of ecosystem-based adaptation strategies.

Resilient infrastructure is an important component of adaptation to climate change in developing nations [4]. Building infrastructure such as roads, irrigation systems, and water treatment plants can increase the capacity of a nation to withstand the impacts of climate change. Additionally, promoting renewable energy sources such as solar, wind, and geothermal energy can reduce greenhouse gas emissions and

improve energy security.

Ecosystem-based adaptation strategies are also important for developing nations. These strategies involve the protection and restoration of natural resources, such as forests and wetlands, to help reduce the impact of extreme weather events. In addition, the development of sustainable agriculture and aquaculture practices can help to reduce climate change impacts on food systems.

ADAPTATION STRATEGIES FOR DEVELOPED NATIONS

Developed nations are also vulnerable to the impacts of climate change. However, they are better equipped with the resources and infrastructure to respond to these impacts [29]. As such, developed nations can focus on pursuing more advanced adaptation strategies.

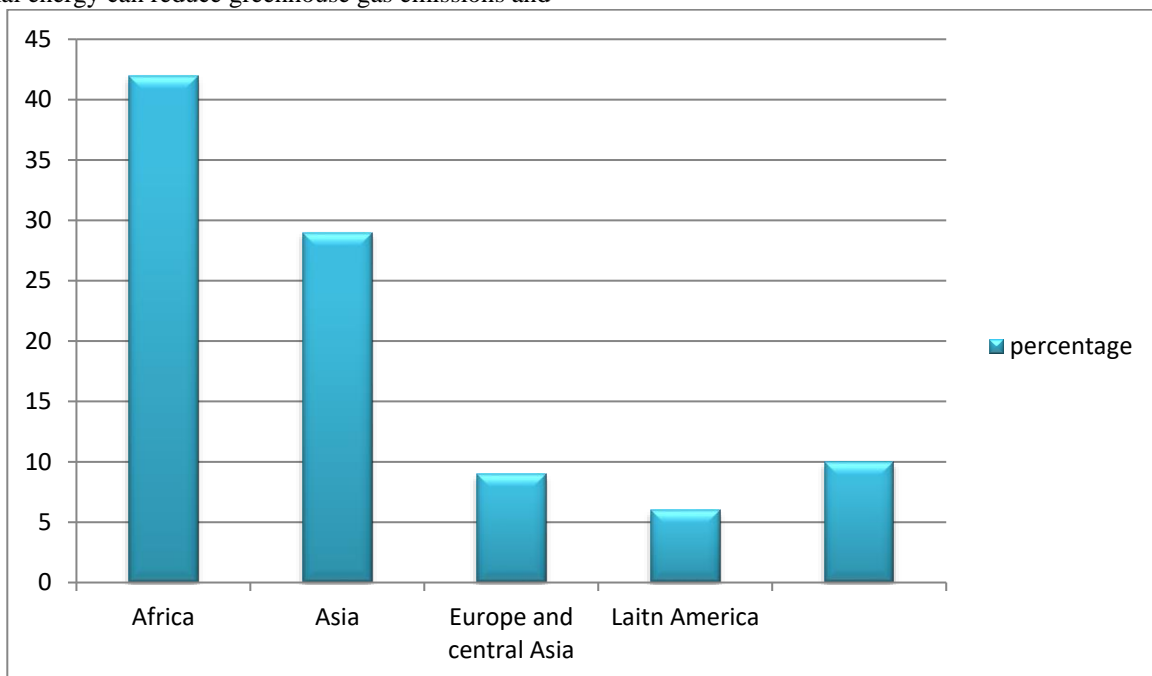


Figure 2: Total projects examined by region
(Source: made by the author)

For example, developed nations can pursue technological innovations to improve the ability to monitor and respond to climate change impacts [5]. This can involve the development of early warning systems for extreme weather events, as well as the implementation of smart grids to better manage energy resources. In addition, developed nations can promote the adoption of regional and global policies to address climate change at the international level.

Developed nations can also focus on pursuing economic-based adaptation strategies. This can involve the implementation of economic incentives, such as carbon taxes or emissions trading, to encourage the shift to low-carbon and climate-resilient economic activities. Additionally, developed nations can pursue strategies to reduce their

vulnerability to climate change by investing in climate-proof infrastructure and promoting the use of green construction materials and practices.

Developed nations have a variety of available strategies for adapting to climate change. This includes the implementation of more efficient and sustainable practices, the development of renewable energy sources and the implementation of policies to reduce emissions. Governments are also investing in green infrastructure and resilience projects to reduce their vulnerability to climate change [6]. These projects include coastal protection, flood protection, and the construction of green spaces. In addition, governments are providing incentives for businesses to invest in green technologies and practices, including renewable energy, energy efficiency, and sustainable agriculture. Finally, governments are working to

build public awareness of climate change and its impacts in order to foster a shift in public opinion and create a greater commitment to addressing the issue.

Developed nations have the resources and infrastructure to proactively address the effects of climate change. These nations often have the necessary resources to develop, implement, and fund adaptation strategies that build resiliency to climate change. One strategy is to increase the energy efficiency of buildings, which can reduce greenhouse gas emissions and energy costs. This can be done through retrofitting existing buildings as well as developing new buildings with more efficient designs [26]. Additionally, developed nations can implement large-scale renewable energy projects to reduce emissions. Developed nations can also invest in coastal protection measures such as sea walls and dikes to protect against rising sea levels. Finally, nations can invest in early warning systems for extreme weather events to better prepare for and respond to these events.

Developing nations are often limited in their adaptation strategies due to a lack of resources and infrastructure. These nations may suffer the most from the effects of climate change, as they are often least equipped to respond. To build resiliency in these nations, adaptation strategies must focus on investing in infrastructure, knowledge and capacity building, and community-based approaches [7]. One adaptation strategy is to improve the energy efficiency of existing buildings and the development of new buildings with more efficient designs. Additionally, nations can build early warning systems to inform communities of potential climate related events, as well as invest in disaster risk reduction plans. Finally, developing nations can promote sustainable agricultural practices such as water conservation, soil management, and improved crop varieties to reduce the impacts of climate change on food production.

CHALLENGES FOR DEVELOPING NATIONS

Developing nations face unique challenges when it comes to adapting to climate change. These countries often have limited resources and infrastructure to address the impacts of climate change, such as extreme weather events, droughts, and flooding. Additionally, many developing nations have large populations with high poverty levels, making it difficult for people to access the resources and services needed to protect themselves from climate-related risks [8]. Additionally, developing countries may have limited access to technology, such as early warning systems, that can help them prepare for and respond to climate change impacts. These countries may also be unable to afford the costs associated with implementing new climate adaptation strategies, such as investing in renewable energy sources. Finally, developing nations often lack the capacity to manage, monitor, and enforce climate change adaptation policies, making it difficult to ensure they are effective.

Developing nations face a unique set of challenges when it comes to adapting to climate change. Since they are often located in areas that are more vulnerable to extreme weather

and climate change impacts, and typically have fewer resources to combat them, developing nations are particularly at risk [9]. As a result, they must often prioritize limited resources to address the most pressing climate change issues, such as sea level rise, droughts, floods, and extreme weather events. Additionally, they may not have access to the same technological solutions or expertise to develop complex adaptation strategies that more developed countries can. This lack of resources and expertise can make it difficult to respond to the direct and indirect effects of climate change, such as displacement of populations, decreased food security, and changes to livelihoods. Furthermore, the effects of climate change may exacerbate existing economic and social inequalities and other systemic issues, further compounding the challenges already faced by developing nations.

Developing nations face a unique set of challenges when it comes to adapting to climate change [10]. These nations tend to be more vulnerable to the impacts of climate change due to their limited resources, lack of infrastructure and technology, and limited access to financial resources. As a result, they are often unable to respond to climate change quickly and effectively. Additionally, many developing nations are heavily reliant on agriculture and rain-fed production, which is highly susceptible to extreme weather events. These nations are also more likely to lack the capacity to implement and monitor adaptation measures, such as early warning systems and risk management strategies, to effectively prepare for and respond to climate change. Furthermore, the cost of adapting to climate change can often be prohibitively expensive for developing nations, further limiting their ability to respond to climate change.

Developing nations face a number of challenges when it comes to adapting to climate change. These countries often lack the financial resources, technological capabilities, and infrastructure necessary to implement and sustain the necessary adaptation measures. Additionally, the lack of political will and institutional capacity to plan and implement adaptation strategies further exacerbates the already difficult situation [11]. Furthermore, developing nations are more vulnerable to the impacts of climate change due to their reliance on natural resources for their livelihoods, limited access to technology, and lower adaptive capacity.

These countries are also more likely to experience extreme weather events and other impacts of climate change, such as sea level rise, intensifying droughts, floods, and heat waves. These impacts can lead to increased poverty, food insecurity, and displacement of people, as well as damage to ecosystems and infrastructure [27]. Lastly, the lack of resources and capacity to respond to the impacts of climate change often leads to a slower implementation of adaptation measures and/or inadequate adaptation strategies.

Developed nations also face challenges when it comes to adapting to climate change. These countries have the financial and technological resources to implement adaptation measures, but they often lack the political will and institutional capacity to effectively plan and implement

strategies. Additionally, the lack of comprehensive and consistent climate policies and regulations can impede the implementation of adaptation measures [12]. Furthermore, developed nations often have an increased reliance on fossil fuels, which can make them more vulnerable to the impacts of climate change. In addition, these countries are often more exposed to extreme weather events and other impacts of climate change, such as sea level rise, intensifying droughts, floods, and heat waves. Lastly, the lack of data and information about the effects of climate change can impede the development of appropriate adaptation strategies.

Developed nations face a unique set of challenges in adapting to climate change. Many developed countries have

high levels of economic and technological resources, yet are unable to fully utilize these resources due to limited political will and a lack of public awareness on the severity of the threat [13]. Furthermore, some of the most advanced industrialized nations have relatively high levels of greenhouse gas emissions and are therefore responsible for a large proportion of global warming. Additionally, many developed countries are more densely populated, leading to increased vulnerability and an increased need for adaptation measures. In order to successfully adapt to climate change, developed nations must work to reduce their emissions, invest in new infrastructure, and increase public awareness and engagement.

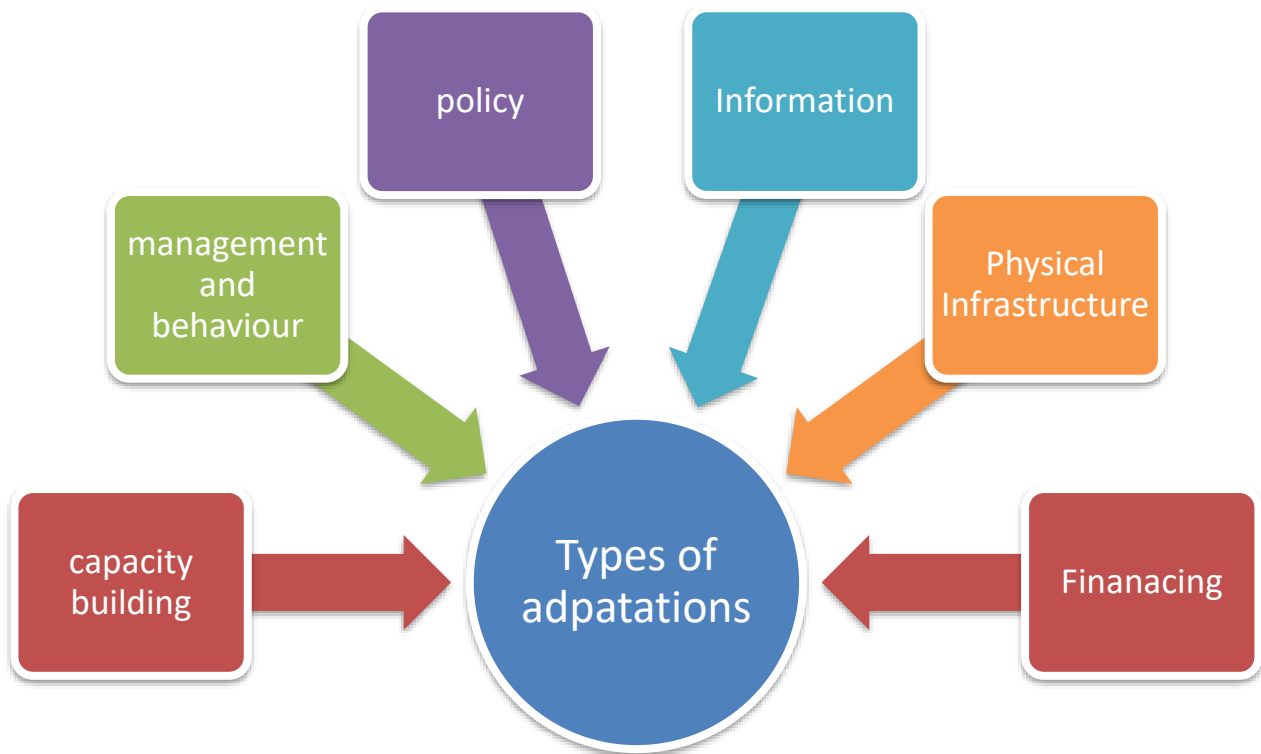


Figure 3: Types of adaptations against climate change
(Source: made by the author)

Developed nations face unique challenges when it comes to adapting to climate change. Their economies are highly developed and often depend on large-scale fossil fuel use and other high-impact activities. This means that it can be more difficult for them to switch to low-carbon, renewable energy sources, as well as to make the kind of lifestyle changes needed to reduce their overall carbon footprint [14]. Additionally, many developed nations have a strong cultural attachment to the current way of life, making it more difficult for them to accept the drastic changes that are necessary. Furthermore, there is often a lack of political will to invest in the necessary adaptations, leading to inadequate infrastructure and resources to address the issue. Finally, some developed nations are already feeling the effects of climate change, such as increased flooding and drought, and may not have the resources to adequately cope with these

changes.

Developed nations face a number of challenges when it comes to adapting to climate change. One of the most pressing challenges is the need to reduce emissions of greenhouse gases, which are the primary contributor to global climate change. Additionally, these nations are often equipped with a number of aging infrastructure systems that are not designed to withstand the potential effects of climate change [15]. For example, many coastal cities and towns are at risk of flooding and other extreme weather events due to rising sea levels. In order to effectively mitigate the impacts of climate change, developed nations must invest in modern and resilient infrastructure, as well as engage in emissions reduction strategies. Additionally, governments must prioritize the development of renewable energy sources, such as solar and wind power, in order to reduce their reliance on fossil fuels.

Developing nations face an even greater challenge when it comes to adapting to climate change. These nations often lack the resources and capacity to adequately prepare for the impacts of climate change, such as floods, droughts, and extreme weather events. Additionally, many of these nations are heavily reliant on fossil fuels for their energy needs, which contributes to the emissions of greenhouse gases. As a result, these nations are particularly vulnerable to the effects of climate change. To adapt to climate change, developing nations must invest in resilient infrastructure, such as flood protection systems and water storage facilities. Additionally, they must prioritize the development of renewable energy sources in order to reduce their reliance on fossil fuels [16]. Governments must also create robust adaptation policies to ensure that their citizens are adequately prepared for the potential impacts of climate change.

COMPARATIVE ANALYSIS

Developing nations are especially vulnerable to the impacts of climate change due to their lack of resources, infrastructure, and capacity to respond to the threat. These nations often have limited resources available to mitigate the effects of climate change, which can have devastating effects on their populations [17]. Developing nations are often located in low-lying coastal areas or in areas of high poverty, which can make them particularly susceptible to the impacts of climate change. Developing nations may have fewer resources available to prepare for extreme weather events such as floods, droughts, and heat waves. They may also lack the resources to properly monitor the climate, which can lead to an underestimation of the severity of the impacts of climate change.

Developed nations, on the other hand, are better equipped to cope with the impacts of climate change due to their greater access to resources, technology, and financial support. Developed nations typically have a more robust infrastructure that can better withstand the impacts of extreme weather events. They also have the resources to monitor climate data and to implement more effective mitigation strategies. Additionally, developed nations are often better able to access financial resources to fund adaptation measures, such as building sea walls and storm surge barriers to protect coastal areas from flooding. Overall, developing nations face a much greater challenge when it comes to adapting to climate change due to their limited resources and infrastructure. Developed nations, on the other hand, are better equipped to cope with the impacts of climate change due to their greater access to resources, technology, and financial support.

Developing countries face a unique set of challenges in adapting to climate change. Limited resources and infrastructure, as well as limited access to risk management tools, can all contribute to a heightened vulnerability to the impacts of climate change [18]. With the majority of global emissions coming from developed nations, developing

countries have had to bear the burden of the consequences, even though they have not contributed to them. In contrast, developed countries tend to have more resources, infrastructure, and access to risk management tools that can enable them to better adapt to climate change. This can be seen in the implementation of strategies such as transitioning to renewable energy and investing in climate-resilient infrastructure. Additionally, developed nations are often able to provide financial resources, technology, and knowledge to developing countries to help them alleviate the impacts of climate change [19]. Consequently, the adaptation strategies required for developing and developed countries differ, with developing countries requiring more assistance from the international community in order to effectively adapt to climate change.

The effects of climate change are felt more heavily in developing countries than in developed nations. Developing countries often lack the financial resources, infrastructure, and technology needed to effectively adapt to climate change, while developed countries have the resources to implement more comprehensive climate adaptation measures. Developing countries are thus more vulnerable to the effects of climate change and are more likely to suffer from the negative impacts of climate change. In contrast, developed countries have access to more resources and can better invest in climate adaptation measures such as renewable energy and improved agricultural practices. Additionally, developed countries are more likely to have the means to fund and implement disaster risk reduction initiatives [20]. This could include early warning systems and preparedness plans that can help to protect communities from the impacts of extreme weather events. In short, developing countries face greater challenges in adapting to climate change compared to developed countries, which have more resources and capabilities to address the issue.

CONCLUSION

Overall, it is evident that developing and developed nations have different levels of ability to adapt to climate change. Developing nations lack the financial and technical resources to develop and implement adaptation strategies, while developed nations are often more prepared and able to do so. This has been exemplified by the different approaches taken by each nation when it comes to adaptation, with developing nations relying on international aid and developed nations taking a more comprehensive approach to adaptation. Ultimately, this means that developing nations are more vulnerable to the impacts of climate change and require more support in order to effectively adapt.

In conclusion, the adaptation to climate change is an issue that affects both developed and developing nations. Developed nations have been able to take measures such as investing in renewable energy sources, emissions trading, and policy reforms to mitigate the effects of climate change. On the other hand, developing nations are unable to access the same resources and technologies, leading to a greater

reliance on traditional practices and methods to cope with the changing climate. As such, the effectiveness of adaptation strategies in both developed and developing nations vary depending on the resources available. Ultimately, the impacts of climate change can be minimized through the implementation of effective adaptation strategies, regardless of the level of development.

In conclusion, developing and developed nations have had varied approaches to adapting to climate change. Developed countries have tended to focus on technological solutions, such as carbon capture and storage, while developing countries have focused on adaptation strategies such as increasing access to renewable energy and reducing emissions. Although both approaches have their advantages and disadvantages, it is clear that both must be pursued in order to reduce the effects of climate change. Ultimately, the success of either approach will depend on the commitment of governments, businesses, and citizens to work together to find solutions that are both effective and affordable.

In conclusion, the adaptation to climate change in developing and developed nations is vastly different. Developing countries face greater challenges as they lack the financial and technological resources to adapt to climate change. Additionally, their lack of infrastructure, poverty and illiteracy contribute to the difficulty of adapting to climate change. On the other hand, developed nations have access to financial resources, technological advancements, and infrastructure that make it easier for them to adapt to climate change. Moreover, the strong educational system in these countries leads to better understanding of climate change, which enables them to plan and adapt more effectively. Therefore, it is clear that both developing and developed nations must work together to ensure that climate change is managed in a responsible manner.

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