

# Improving climate resilience: a suggestive approach for Argentina

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## Executive summary

Argentina plays a significant global role in politics, economics, and diplomacy, impacting agriculture, energy resources, and international agreements. However, the nation faces substantial vulnerability to climate change, affecting its agricultural sector, energy resources, and socio-economic landscape. This paper provides an overview of Argentina's climate challenges and responses, suggesting approaches to enhance climate resilience and emphasizing the United Nations' potential support.

Argentina experiences diverse negative climate impacts, including temperature rise, extreme weather events, glacier melting, water scarcity, and increased wildfire risks, with floods and droughts causing economic losses and disrupting infrastructure. The agricultural sector, vital for food security and economic stability, faces vulnerabilities, while the energy sector confronts challenges due to changing water availability and rising temperatures. Argentina has made commendable climate efforts, such as renewable energy investments and participation in international agreements. Yet, experts consider its targets insufficient due to economic instability, fossil fuel dependence, and sustainable land-use issues. The country also grapples with challenges like economic priorities, policy consistency, and limited public awareness, hindering its climate resilience.

Strengthening climate resilience involves comprehensive approaches encompassing infrastructure, water management, agriculture, renewable energy, forestry, community engagement, and international collaboration. United Nations support plays a crucial role in providing technical expertise, climate finance access, capacity building, and fostering data collaboration. Effective climate action in Argentina necessitates synergy among government policies, international cooperation, private sector involvement, and public awareness to protect ecosystems and people in a changing climate.

## POLICY RECOMMENDATIONS

### 1. Economic and Development Challenges

Policy Focus: Ensure consistent funding for climate change mitigation despite economic and political instability.

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**2. Energy Transition and Fossil Fuels Dependence**

Policy Action: Incentivize the transition to cleaner energy sources, emphasizing policies and investments in renewable energy infrastructure.

**3. Agricultural and Land-Use Practices**

Policy Measure: Enforce regulations promoting sustainable land-use practices in agriculture, particularly addressing deforestation concerns.

**4. Political and Policy Challenges**

Policy Approach: Establish and maintain consistent long-term climate policies, overcoming historical inconsistencies.

**5. Socioeconomic Inequities**

Directive: Develop targeted policies addressing socioeconomic disparities, ensuring marginalized populations can adapt to climate change.

**6. International Climate Agreements**

Policy Strategy: Develop strategies to meet international commitments economically, advocating for global cooperation and support.

**7. Strengthening Argentina's Climate Resilience**

Comprehensive Approach: Adopt a holistic strategy focusing on climate-resilient infrastructure, sustainable agriculture, and community engagement.

**a. Climate-Resilient Infrastructure:**

- i. Upgraded Buildings: Improve building codes for infrastructure resilience.
- ii. Flood Management: Develop effective stormwater drainage systems.
- iii. Transport Infrastructure: Upgrade roads and transportation networks for climate resilience.

**b. Water Management:**

- i. Storage and Conservation: Implement measures to address water scarcity.
- ii. Watershed Management: Protect and restore watersheds for consistent water supply.

**c. Agricultural Adaptation:**

- i. Crop Diversification: Encourage diverse crops for climate resilience.
- ii. Improved Soil Management: Promote sustainable soil practices.

**d. Renewable Energy Transition:**

- i. Wind and Solar Power: Expand renewable energy production.
- ii. Energy Efficiency: Enhance energy efficiency in industries and buildings.

**e. Forestry and Conservation:**

- i. Forest Protection: Preserve forests for carbon sequestration.
- ii. Afforestation and Reforestation: Implement projects for increased forest cover.

f. Community Engagement:

- i. Public Awareness Campaigns: Conduct campaigns to educate citizens.
- ii. Local Adaptation Initiatives: Engage communities in climate adaptation.

**8. UN Support for Strengthening Climate Resilience**

Strategic Engagement: Collaborate with the United Nations for technical expertise, climate finance access, capacity building, data collaboration, policy development, and community mobilization.

**KEYWORDS**

Climate Change; Environmental Implication; Resilience; Greenhouse Gas; Argentina; United Nations.

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## 1. Introduction

Argentina, the second-largest South American nation, spans 2.8 million square kilometres and is home to around 45.8 million people. As one of Latin America's leading economies, Argentina holds a prominent position in global politics and economics, influencing diverse sectors and international relations. The country's significance lies in its abundant natural resources, engagement in international politics, and its role in South American diplomacy. It is among the world's leading food exporters, with large-scale agricultural and livestock industries (IFAD, 2023), that wields a substantial influence on food prices and contributes significantly to the imperative goal of ensuring global food security. Its energy resources<sup>2</sup>, including oil, natural gas, and renewables, shape the global energy landscape as the world shifts towards cleaner sources.

Politically, Argentina actively engages in international diplomacy through organizations like the United Nations, G20, and the World Trade Organization, contributing to discussions on climate change, trade, human rights, and peacekeeping missions, thus shaping international policies and agreements. Argentina's multifaceted influence is undeniable, as it plays a pivotal role in various global affairs<sup>3</sup>, including ensuring food security, shaping the energy landscape, and participating in critical international discussions.

**“The World Bank Group’s Country Climate and Development Report (CCDRs) of 2022 explicitly highlights the impact of the climate crisis on poverty and the Argentine macroeconomy. The report analyses the climate change impacts Argentina already faces, mainly through losses caused by droughts and floods. It evaluates that drought losses could account for 4 percent of Argentina’s GDP by 2050. Furthermore, floods may cause up to \$1.4 billion in average annual asset losses and \$4 billion in welfare losses.”**

Climate change poses a growing threat to nations across the globe, with Argentina being no exception. The World Bank Group's Country Climate and Development Report (CCDRs) of 2022 explicitly highlights the impact of the climate crisis on poverty and the Argentine macroeconomy. The report analyses the climate change impacts Argentina already faces, mainly through losses caused by droughts and floods. It evaluates that drought losses could account for 4 percent of Argentina's GDP by 2050. Furthermore, floods may cause up to \$1.4 billion in average annual asset losses and \$4 billion in welfare losses. The report also noted that climate events have widened inequality (The World Bank, 2022a).

The changing climate patterns have brought about extreme weather events, shifting rainfall patterns, and rising temperatures, all of which have significant implications for Argentina's agriculture, economy, and overall well-being. The Argentine economy relies heavily on natural capital (agriculture and natural resources), contributing to the country's vulnerability to climate change. Argentina is one of the world's largest agriculture producers, and agroindustry represents about 54 percent of its 2021 exports (The World Bank, 2022b), making the economy particularly vulnerable to climate variability. The country also has vast renewable and nonrenewable energy resources, with world-class and largely untapped wind and solar power sources and the world's second-highest shale gas and fourth highest shale oil reserves (The World Bank, 2018).

This essay commences by examining the impacts of climate change on Argentina and the country's response to this existential threat. It subsequently delves into the contemporary challenges the nation encounters while combating climate change. In its final section, the essay aims to propose a suggestive multifaceted approach to enhance Argentina's climate resilience, exploring potential avenues for United Nations support in bolstering these efforts.

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2. Regarding Argentina's energy resources, even though shale gas is a fossil fuel, it's important to note that the country has the second largest reserve of shale gas, and the fourth largest reserve of shale oil worldwide (IEA, 2020).

3. Argentina is a G20 member, third largest economy in Latin America, and it has also now been invited to become a member of BRICS.

## 2. Argentina's climate challenges: understanding the impact of climate change

Climate change is a global crisis with far-reaching implications, and Argentina, a nation known for its diverse landscapes and rich cultural heritage, is not immune to its effects. This section delves into the profound impact of climate change on Argentina, encompassing environmental, economic, and social consequences. By examining the impacts of climate change on Argentina, we aim to gain insight into the multifaceted nature of this critical issue.

Argentina's vulnerability to a diverse array of climate change impacts is intricately tied to the country's vast geographical and climatic variations. The northern regions are confronted with escalating temperatures and heightened susceptibility to extreme weather events, such as droughts and floods, contributing to water scarcity challenges. In the central Pampas region, alterations in precipitation patterns pose risks to vital sectors like agriculture, influencing the overall economic landscape. The Andean and southern regions grapple with issues such as glacial melt and shifts in biodiversity, impacting ecosystems and local economies. Climate change has repercussions on temperature and precipitation patterns. With the intensification and increased frequency of floods and droughts, the severity of overflows and coastal inundations escalates, while glacier melting contributes to heightened water scarcity and a potential increase in wildfire risk<sup>4</sup>.

According to EM-DAT (2022), a global database on natural and technological disasters, in Argentina, floods<sup>5</sup> have been the most severe weather-related disaster in terms of number of events, affected people, health impacts, and their associated asset losses. From 1900 to 2021, 92 percent of the 115 recorded natural disasters were climate-related, mostly floods (58 percent) and storms (20 percent) (Figure 1). Argentina loses up to \$1.4 billion (2015 purchasing power parity PPP) in annual expected asset losses from floods (The World Bank, 2022a, p. 6), which translates into up to \$4 billion in welfare losses (The World Bank, 2021).

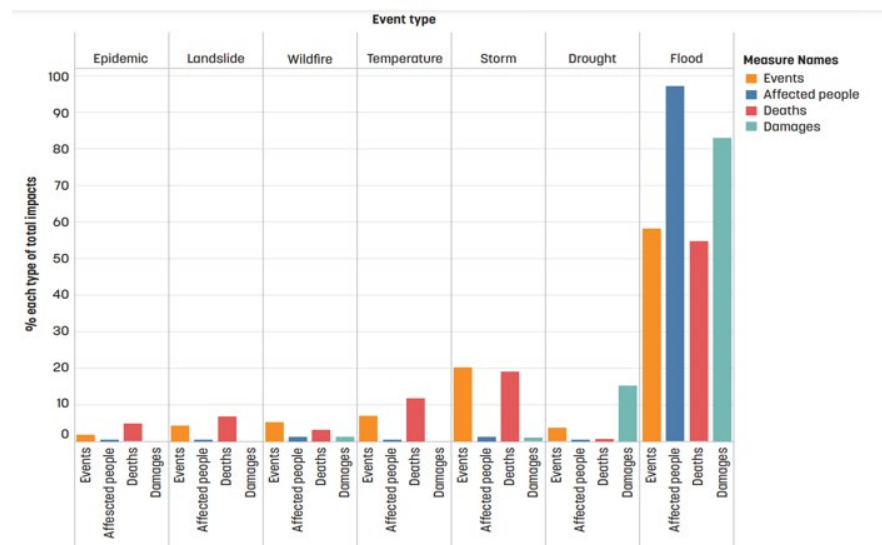
Floods also severely affect Argentina's transport systems, causing major economic disruptions. Infrastructure disruptions could cost Argentine firms \$4 billion a year, or 0.8 percent of the 2017 gross domestic product (GDP), mostly due to transport interruptions (Hallegatte, Rentschler and Rozenberg, 2019, cited in The World Bank, 2022a, p. 7).

Further, droughts and excessive precipitation have significant ramifications for Argentina's agricultural sector, leading to notable macroeconomic and social implications. Climate-related events result in reduced crop yields, impacting the majority of agricultural regions and harvests, causing economic setbacks in various provinces, and undermining food security. The volatility of agricultural production means this variable's average impact is high. Nationally, annual losses in rainfed agriculture from water deficits or excesses are estimated at about \$2.1 billion, or 0.61 percent of GDP (The World Bank, 2022a). The composition of exports, where agriculture constitutes approximately 60% of the total, combined with the taxation framework, renders droughts a pivotal factor in maintaining macroeconomic equilibrium. The immediate consequences of the 2018 drought alone accounted for more than half of the decline in economic activity during that year, further compounding the preexisting economic and financial crisis<sup>6</sup>.

4. At first, as the glacier melts, more water runs downhill away from the glacier. However, as the glacier shrinks, the water supply will diminish, and farms, villages and cities might lose a valuable water source (IPCC, 2022b, p. 2300). Moreover, Chapter 12 of IPCC (2022a) shows overall increases in temperature and humidity for Argentina, positive rainfall trend in the southern part of La Plata Basin (northeastern Argentina), increased precipitation and climate extremes in the east, and the association of El Niño events with increased precipitation in the north.

5. World Bank staff calculations, based on data from EM-DAT (<https://public.emdat.be/>).

6. The Argentine Central Bank attributes the 4% GDP growth rate decline in the second quarter of 2018 largely to agricultural production contraction due to the drought (Banco Central de la República Argentina, 2018).

**Figure 1.** Effects of natural disasters in Argentina (1900-2021)

Source: The World Bank, 2022, p. 7.

In the absence of adaptation measures (like drought-resistant crops), climate change could result in up to 10 percent yield losses for sunflowers, 30 percent for corn and wheat, and 50 percent for soybeans by 2050 (The World Bank, 2021, p. 21). Under the existing infrastructure and prevailing water use efficiency, rising temperatures and increased evapotranspiration rates would render the preservation of the current 2.1 million irrigated hectares unfeasible. In the absence of mitigation measures, climate change is poised to imperil approximately a quarter (25%) of the nation's irrigated land, resulting in annual losses of around \$837 million, primarily concentrated within the Cuyo region.

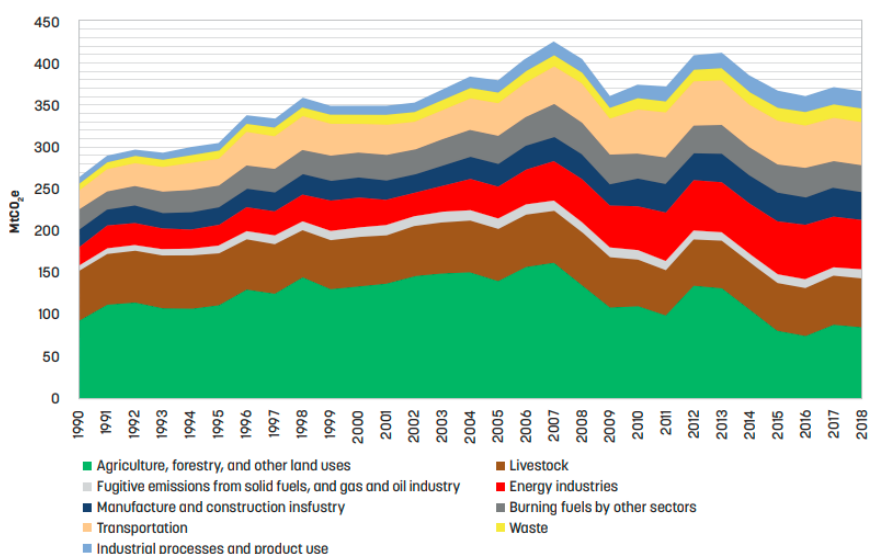
Furthermore, increased water scarcity and drought frequency threaten waterway transport, hydropower production, and the delivery of agricultural products to urban consumption centres and exports. About 84 percent of agriculture and byproduct exports come through the ports on the Paraguay–Paraná–de la Plata waterway, or Hidrovía<sup>7</sup>, where navigability is maintained by dredging critical passages and therefore, with increased water scarcity, the cost of maintaining navigability on waterways will increase. Hydroelectric production also depends on the available volume of water, which is likely to decrease under climate change. In 2021, a profound drought had a substantial impact on Argentina's hydropower generation, causing it to drop in total electricity production (WMO, 2022, p. 18). To compensate for this shortfall, thermal power generation assumed a pivotal role, resulting in escalated utilization of fossil fuels and elevated generation expenses. The drought's effects extended into 2022, affecting electricity generation costs, which were subsequently amplified by the conflict in Ukraine and ultimately leading to significant price hikes. Moreover, the agricultural supply chain within the country is significantly affected, as water scarcity directly influences crop yields and productivity. Reduced water availability hampers irrigation capabilities, leading to decreased agricultural output and potentially compromising food security at the domestic level. The consequences extend to Argentina's capacity to meet international export demands, with potential disruptions in the timely and reliable delivery of agricultural products to global markets.

Scientific evidence unequivocally indicates that Argentina is poised to confront catastrophic climate repercussions should it persist on a high-emission trajectory. In the absence of immediate and resolute measures, Argentina's future portends a distressing surge, with agricultural drought occurrences projected to spike by a staggering 65% by 2050, while heatwaves are anticipated to persist for over 6247% longer periods. The confluence of rising sea levels aggravated coastal erosion, and increasingly severe weather patterns are anticipated to wreak hav-

7. Around 84% of exported grains and by products, and 92 percent of containers moved (for both export and import) are transported by river (MAGYP, 2023; Estado Argentino, 2023).

oc on Argentina's economic landscape. This grim outlook projects potential losses amounting to approximately 8% of the nation's GDP by the turn of the century (CMCC, 2021, p. 20).

**Figure 2.** Argentina's GHG emissions, by sector and energy subsector (1990-2018)



Source: The World Bank, 2022, p. 9.

A number of discernible manifestations of climate change in Argentina can be summarised under the following heads:

#### a. Environmental Implications

- (i) **Rising Temperatures and Extreme Weather Events:** Increasing global temperatures and the escalation of extreme weather events in Argentina, including droughts, floods, and heatwaves, have consequences for ecosystems, including glacier melting in the Andes and disruptions to wildlife habitats.
- (ii) **Biodiversity Loss:** The threat climate change poses to Argentina's unique biodiversity, resulting in endangered species and ecosystem, impacts on ecosystem services like pollination and water purification.
- (iii) **Water Scarcity and Glacial Retreat:** The implications of climate change on water resources, including potential water scarcity and glacial retreat, lead to challenges in water management, agriculture, and hydropower generation.

#### b. Economic Implications

- (i) **Agriculture and Food Security:** Argentina's agricultural sector vulnerability to changing climate patterns impacts on crop yields, livestock production, and global food prices. Agriculture is a core element of Argentina's economy, contributing approximately 4.4% of the country's annual GDP.
- (ii) **Energy Supply:** Rising temperatures and more severe heatwaves will affect Argentina's energy system and change the profile of its energy demand. It bears consequences for the energy sector, particularly the reliance on hydropower generation and fossil fuels. Therefore, it brings around a need for diversifying the energy matrix through renewable sources.
- (iii) **Economic Costs:** The economic costs associated with climate-related damages, such as infrastructure repairs and disaster management, underscore the importance of climate resilience for ensuring long-term economic stability.

“Argentina has made significant strides in addressing climate change. The country is committed to reducing its greenhouse gas emissions (GHG) and has set ambitious targets for the future. It has implemented policies and initiatives to transition to a more sustainable and environmentally friendly economy, including investing in renewable energy, improving energy efficiency, and protecting its natural resources.”

#### c. Social Implications

- (i) **Health Risks:** The public health risks linked to climate change, including heat-related illnesses and the spread of vector-borne diseases, will have a disproportionate impact on vulnerable populations without access to adequate healthcare.
- (ii) **Displacement and Migration:** The potential for climate-induced displacement and migration, particularly in vulnerable coastal regions, highlights the need for policies and strategies to address the challenges of climate migrants.
- (iii) **Social Inequality:** The exacerbation of existing social inequalities as marginalized communities bear the brunt of climate impacts highlights the importance of ensuring equitable access to resources and opportunities.

### 3. Argentina's response to impact of climate change

Argentina has made significant strides in addressing climate change. The country is committed to reducing its greenhouse gas emissions (GHG) and has set ambitious targets for the future. It has implemented policies and initiatives to transition to a more sustainable and environmentally friendly economy, including investing in renewable energy, improving energy efficiency, and protecting its natural resources (PAGE Argentina, 2021). Argentina is also actively participating in international efforts to combat climate change, such as the Paris Agreement (Republic of Argentina, 2016), and is working to enhance its resilience to the impacts of a changing climate. Through a combination of domestic actions and international cooperation, Argentina is taking meaningful steps to mitigate the effects of climate change and build a more sustainable future (The World Bank, 2017).

Argentina has implemented significant measures to curb emissions across various sectors. In the transportation sector, plans involve the development of cycling infrastructure, the introduction of electric rail systems, and the establishment of targets for electric vehicles (EVs) in both public and private fleets, as well as public transport (Climate Action Tracker, 2023). In the building sector, strategies encompass incentives for rooftop solar installations and solar heating, as well as measures to promote more energy-efficient lighting and appliances (Climate Action Tracker, 2023). Additionally, homes are now subject to energy efficiency labelling (Climate Action Tracker, 2023). In the waste sector, Argentina has committed to eliminating open-air landfills and has set goals to reduce food loss and waste by the year 2030 (Climate Action Tracker, 2023). Some of the key initiatives (though most of these are in a nascent stage of implementation) by the nation are summarised below:

“Through a combination of domestic actions and international cooperation, Argentina is taking meaningful steps to mitigate the effects of climate change and build a more sustainable future.”

**a. Renewable Energy Investments:** Argentina has been investing in renewable energy sources, particularly wind and solar power. The country aims to increase the share of renewables in its energy mix to reduce GHG emissions. Argentina is aiming to generate 57% of its energy from renewable sources by the end of the decade, according to an official energy transition plan (República Argentina, 2023) launched in late June 2023.

**b. Afforestation and Reforestation:** To combat deforestation and mitigate climate change impacts, Argentina has implemented afforestation and reforestation programs to restore and conserve its forests. The Green Climate Fund (GCF) approved a US \$82 million project to combat deforestation and promote sustainable forest management in Argentina (FAO, 2020). The funds destined for Argentina were granted under the REDD + Results-Based Payments Pilot Program.

**c. Climate Adaptation Strategies:** Argentina has developed strategies to adapt to the changing climate, including efforts to improve water management, protect against flooding, and enhance agricultural practices (The World Bank; CIAT and CATIE, 2015).

**d. Participation in International Agreements:** Argentina is a signatory to international agreements<sup>8</sup>. It has committed to reducing its emissions and contributing to global efforts to limit global warming. Argentina submitted its revised second Nationally Determined Contribution (NDC) in November 2021, its NDC includes a more ambitious goal of not exceeding the net emission of 359 MtCO<sub>2</sub>e in 2030 (absolute, economy-wide, and unconditional), equivalent to a total decrease in emissions of 19% by 2030, compared to the historical peak reached in 2007, and a reduction of 25.7% compared to the previous NDC (UNDP, 2023).

**e. Climate Research and Data Collection:** Argentina has been investing in climate research and data collection to better understand climate change impacts on its territory and plan accordingly. The National Meteorological Service operates a network of weather stations, contributing to the collection of crucial meteorological data<sup>9</sup>. The country collaborates with international organizations and participates in global initiatives, fostering a broader exchange of climate-related information. Argentina's commitment is evident through its regular submissions to the United Nations, detailing GHG emissions, vulnerabilities, and mitigation strategies. The establishment of the National Climate Change Observatory (OECD, 2020) further centralizes efforts, coordinating research and monitoring activities. Argentine scientists actively contribute to academic publications, reflecting the nation's dedication to advancing climate knowledge through data-driven approaches.

**f. Sustainable Agriculture Practices:** Argentina is promoting sustainable agriculture practices to reduce the environmental impact of its agricultural sector, which is a significant contributor to the nation's economy (Agroberichten Buitenland, 2023). The adoption of sustainable practices involves precision farming techniques, agroecology, and conservation agriculture. Precision farming utilizes technology to optimize inputs such as water, fertilizers, and pesticides, thereby enhancing resource efficiency (OECD, 2019).

**g. Resilience Building:** The country is working to improve its resilience to climate-related disasters, such as floods and droughts, through infrastructure development and risk reduction strategies. The Argentinian government's National Climate Change Office developed an interactive website (known as Argentina's Climate Risks Map System (SIMARCC)) that provides risk maps covering different scenarios of threats and vulnerabilities related to climate change (OECD, 2018, p. 25). This platform combines georeferenced data on the potential hazards from climate change with data on social vulnerabilities. This tool was designed to be useful for decision makers in the public and private sectors.

As previously argued, Argentina submitted its revised second NDC<sup>10</sup> in November 2021. It includes a more ambitious goal of not exceeding the net emission of 359 MtCO<sub>2</sub>e in 2030 (absolute, economy-wide, and unconditional), equivalent to a total decrease in emissions of 19% by 2030, compared to the historical peak reached in 2007, and a reduction of 25.7% compared to the previous NDC (UNDP, 2023). This pledge aligns with the nation's comprehensive strategy known as the 'Climate Change Adaptation and Mitigation Plan' (Ministry for the Environment and Sustainable Development of the Argentine Republic, 2022). This plan encompasses a total of 250 public policy initiatives scheduled for implementation by 2030, with a primary focus on transitioning to natural gas as a bridging fuel. Additionally, it emphasizes emissions reduction in the agricultural and livestock sectors and places significant emphasis on enhancing water resource management. The estimated cost of the plan exceeds \$185 billion, equivalent to approximately 40% of Argentina's 2021 GDP, prompting the government to explore international financing options to facilitate its realization.

Other initiatives to enhance climate resilience include the "Plan Belgrano" (The World Bank, 2023), which focuses on improving infrastructure and water management in the northern

8. As a Non-Annex 1 (non-industrialized) party to the National United Nations Framework Convention on Climate Change (UNFCCC), Argentina also ratified the Kyoto Protocol in 2001 and the Paris Agreement in 2016. Argentina accepted the Doha Amendment in 2015.

9. More information: <https://halo-db.pa.op.dlr.de/institute/62>.

10. The Nationally Determined Contribution (NDC) is each country's national plan to address climate change. Countries submit an NDC as part of Paris Agreement obligations.

provinces, mitigating vulnerability to droughts and floods. Simultaneously, forest conservation efforts in the Yungas and Patagonia regions bolster carbon sequestration and biodiversity conservation. In Buenos Aires, flood management initiatives, including enhanced stormwater drainage, address the mounting risk of flooding, collectively contributing to the nation's climate resilience.

**“As outlined in the Green Climate Fund’s “Readiness Proposal 2020” (Green Climate Fund, 2020), Argentina possesses a robust institutional framework for climate change mitigation and adaptation. However, to fulfil its ambitious NDCs and transition towards a resilient, low-emissions economy, Argentina requires access to financial mechanisms that align with the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement.”**

Argentina is gradually advancing in the formulation of climate policies, but it falls short of demonstrating strong commitment in pivotal sectors like energy, agriculture, and livestock. In November 2022, Argentina fulfilled a long-standing promise by submitting its Long-Term Strategy (LTS), reaffirming its goal to achieve GHG neutrality by 2050. Subsequently, the nation unveiled its National Plan for Climate Change Mitigation and Adaptation (Ministry for the Environment and Sustainable Development of the Argentine Republic, 2022), outlining a variety of measures and sector-specific objectives in support of its GHG emission targets, although the level of ambition remained modest. In the collective assessment of climate experts, Argentina’s climate targets and policy measures are deemed ‘Critically insufficient’ by the Climate Action Tracker (2023)<sup>11</sup>. As outlined in the Green Climate Fund’s “Readiness Proposal 2020” (Green Climate Fund, 2020), Argentina possesses a robust institutional framework for climate change mitigation and adaptation. However, to fulfil its ambitious NDCs and transition towards a resilient, low-emissions economy, Argentina requires access to financial mechanisms that align with the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement.

#### 4. Argentina’s climate change challenges: an analysis

Argentina, like many countries, faces challenges in tackling climate change due to a variety of factors. It’s important to note that addressing climate change is a complex and multifaceted issue, and no single factor can explain why a country may struggle to make significant progress. Here are some of the evident challenges that Argentina faces today as it endeavours to address climate change:

**a. Economic and Development Challenges:** Argentina has faced economic and political instability over the years, which has, at times, diverted resources and attention away from climate change mitigation efforts. Focusing on economic development and poverty reduction has, on occasion, taken precedence over environmental concerns in the short term.

**b. Energy Mix and Dependence on Fossil Fuels:** Argentina’s energy sector is heavily dependent on fossil fuels, making it a significant contributor to greenhouse gas emissions. One challenge is to transition towards cleaner and more sustainable energy sources. The country has taken steps to invest in renewable energy, particularly wind and solar power. However, the transition is complex, and it requires substantial investments in infrastructure and policy changes. Therefore, transitioning to cleaner and more sustainable energy sources can be costly and challenging, both technically and politically.

**c. Agricultural and Land-Use Practices:** Argentina is a major agricultural producer, and the expansion of agriculture, particularly soy farming, has led to deforestation and other environmental issues. Sustainable land-use practices can be difficult to implement in the face of powerful agricultural interests.

11. The CAT utilizes the “Fair Share” model as its basis for evaluation. This model assesses a country’s contributions to climate action in alignment with the global effort required to limit global warming. In this context, the term “Fair Share” implies that each nation is expected to contribute a fair and equitable share to global climate goals based on its capacity and responsibility. The “Critically Insufficient” rating underscores that Argentina’s current efforts fall significantly short of what is considered a fair and necessary contribution, emphasizing the need for more ambitious and effective climate action to align with international climate goals. The CAT thus serves as a tool for assessing the adequacy of a country’s climate policies in the broader context of global climate objectives.

**d. Political and Policy Challenges:** Consistency in climate policies and political support for climate action at times has been inconsistent, making it difficult to enact long-term strategies and measures to reduce GHG emissions.

**e. Socioeconomic Inequities:** Historically, disparities in both social and economic spheres have consistently impeded the effective response to climate change. Marginalized populations, in particular, face resource and infrastructure deficiencies that hinder their capacity to adapt to the repercussions of climate change.

**f. International Climate Agreements:** Being a signatory to International Climate Agreements like the Paris Agreement poses a challenge to Argentina due to the inherent commitments and obligations associated with these agreements. Meeting emission reduction targets often necessitates substantial financial investments and policy adjustments, which can strain the nation's resources and economy. Additionally, international agreements are subject to geopolitical dynamics and the cooperation of multiple countries, making the attainment of climate goals contingent on global consensus and collaboration.

**g. Limited Public Awareness and Education:** The level of public awareness and comprehension regarding climate change issues significantly influences the endorsement of climate action (Mercado-Sáez and Galarza, 2017). In certain instances, there is a noticeable absence of broad-reaching awareness and education on this subject in Argentina.

Argentina, like many countries, grapples with substantial challenges in its endeavour to combat climate change. While the nation has taken commendable steps to address this issue, such as setting GHG reduction targets and promoting the use of renewable energy, the intricate nature of these challenges, alongside other contributing factors, makes expeditious progress in the fight against climate change a daunting task. These challenges have far-reaching impacts on critical sectors like agriculture and energy, emphasizing the need for comprehensive, coordinated efforts.

**“The imperative of enhancing climate resilience cannot be overstated, as it is integral to safeguarding the nation’s economy, environment, and public health. To this end, Argentina can realize substantial advancements by adopting a comprehensive approach that encompasses climate-resilient infrastructure, sustainable agricultural practices, a shift towards renewable energy sources, and active community engagement.”**

## 5. Strengthening Argentina’s climate resilience

As per the World Bank (2022a), Argentina has the potential to achieve more robust economic growth through a transition to a low-carbon economy, with particular emphasis on reshaping its energy and agricultural sectors. The imperative of enhancing climate resilience cannot be overstated, as it is integral to safeguarding the nation’s economy, environment, and public health. To this end, Argentina can realize substantial advancements by adopting a comprehensive approach that encompasses climate-resilient infrastructure, sustainable agricultural practices, a shift towards renewable energy sources, and active community engagement. Highlighted below are some key strategies that can facilitate Argentina in fortifying its climate resilience:

### a. Climate-Resilient Infrastructure Strategies

- (i) **Upgraded and Resilient Buildings:** Improve building codes and standards to make infrastructure more resilient to extreme weather events such as floods and storms.
- (ii) **Flood and Stormwater Management:** Develop and maintain effective stormwater drainage systems and flood protection measures in urban and rural areas.
- (iii) **Transport Infrastructure:** Upgrade roads, bridges, and transportation networks to withstand the impacts of climate change.

### b. Water Management Strategies

- (i) **Water Storage and Conservation:** Implement water storage and conservation measures to address water scarcity during droughts and manage excess water during heavy rainfall.

- (ii) **Watershed Management:** Protect and restore watersheds to maintain water quality and ensure a consistent water supply.

#### c. Agricultural Adaptation Strategies

- (i) **Crop Diversification:** Encourage diversification of crops to reduce dependence on a single crop and increase resilience to changing climate conditions.
- (ii) **Improved Soil Management:** Promote sustainable soil management practices to prevent soil degradation and erosion.

#### d. Renewable Energy Transition Strategies

- (i) **Wind and Solar Power:** Expand renewable energy production, particularly wind and solar power, to reduce the energy sector's vulnerability to changing water availability and lower greenhouse gas emissions.
- (ii) **Energy Efficiency:** Enhance energy efficiency in industries and buildings to reduce energy demand.

#### e. Forestry and Conservation Strategies

- (i) **Forest Protection:** Protect and preserve forests to sequester carbon and maintain biodiversity, contributing to climate resilience.
- (ii) **Afforestation and Reforestation:** Implement afforestation and reforestation projects to increase forest cover and carbon storage.

#### f. Community Engagement Strategies

- (i) **Public Awareness Campaigns:** Conduct public awareness campaigns to educate citizens about climate change and its impacts, encouraging support for resilience initiatives.
- (ii) **Local Adaptation Initiatives:** Engage local communities in the development and implementation of climate adaptation strategies.

#### g. Coastal Protection Strategies

- (i) **Seawalls and Beach Nourishment:** Implement coastal protection measures, such as seawalls and beach nourishment, to mitigate the impacts of sea-level rise and storm surges on coastal areas.
- (ii) **Erosion Control:** Develop erosion control measures to protect coastal infrastructure and ecosystems.

#### h. National and Regional Coordination Strategies

- (i) **Policy Consistency:** Ensure consistent policies and regulations for climate resilience at both the national and regional levels.
- (ii) **Funding Mechanisms:** Establish funding mechanisms to support adaptation projects and promote regional coordination.

#### i. Research and Data Strategies

- (i) **Climate Research:** Invest in climate research and data collection to better understand local climate impacts and make informed decisions regarding resilience strategies.
- (ii) **Early Warning Systems:** Develop and enhance early warning systems to provide timely information on extreme weather events and other climate-related risks.

#### j. International Collaboration Strategies

- (i) **Regional Partnerships:** Strengthen collaboration with neighbouring countries to address shared climate challenges.

- (ii) **International Support:** Collaborate with international organizations to access knowledge, resources, and technology to enhance climate resilience.

#### k. Additional Measures

- (i) **Ensuring Social Protection:** Establishing social protection systems, including cash transfers, efficiently reduces welfare impacts of climate-related events like droughts and floods. These systems help the most vulnerable adapt to climate change's gradual effects.
- (ii) **Exploiting Green Competitiveness:** Argentina can tap into green competitiveness by investing in renewable energy, prioritizing energy efficiency, promoting sustainable agriculture, fostering eco-friendly innovation, introducing green certifications, developing green infrastructure, creating green finance mechanisms, and raising environmental awareness through education. These strategies can boost economic growth, reduce environmental impact, and position Argentina as a competitive player in the global green economy. Lithium, vital for lithium-ion batteries used in electric vehicles and energy storage, can help Argentina combat climate change. As a leading global lithium producer<sup>12</sup>, Argentina can expand lithium production and EV infrastructure to reduce transport emissions, promote cleaner energy, and enhance sustainability. Economic gains from the lithium industry can fund climate initiatives, bolstering resilience to climate change.

## 6. Leveraging United Nations support in strengthening climate resilience

“By leveraging the support and resources provided by the United Nations, Argentina has the potential to make significant strides in enhancing its climate resilience. That, in turn, will fortify its natural environment, bolster economic stability, and enhance community resilience in the face of the multifaceted challenges presented by climate change.”

By leveraging the support and resources provided by the United Nations, Argentina has the potential to make significant strides in enhancing its climate resilience. That, in turn, will fortify its natural environment, bolster economic stability, and enhance community resilience in the face of the multifaceted challenges presented by climate change. Highlighted below are several key areas in which the United Nations can assist Argentina in strengthening its climate resilience:

**a. Technical Expertise and Knowledge Sharing:** The United Nations can provide Argentina with access to a network of climate experts and researchers who can offer guidance on climate resilience strategies tailored to the country's specific vulnerabilities. These strategies include technical assistance in areas such as water management, infrastructure development, and sustainable agriculture practices.

**b. Climate Finance Access:** The UN can facilitate Argentina's access to climate finance mechanisms, helping the country secure grants, loans, and funding from international sources like the Green Climate Fund. These financial resources can be directed towards critical climate resilience projects and initiatives.

**c. Capacity Building:** The UN can support capacity-building efforts within Argentina by offering training programs, workshops, and knowledge-sharing platforms for government agencies, local institutions, and community organizations. Capacity building helps enhance the country's ability to develop and implement effective climate resilience policies and programs.

**d. Data and Research Collaboration:** The UN can collaborate with Argentine institutions to improve climate data collection, analysis, and dissemination. This partnership can result in the development of localized climate models, risk assessments, and early warning systems, enabling more accurate predictions of extreme weather events.

**e. Policy Development and Guidance:** The UN can work closely with Argentina's government to formulate comprehensive and consistent climate policies and regulations. This co-

12. The country accounts for 21% of the world's reserves (Nugent, 2022).

operation includes guidance on legal frameworks, incentives for sustainable practices, and measures to ensure policy continuity, regardless of changes in government.

**f. Community Mobilization and Education:** The UN can assist Argentina in designing and implementing public awareness campaigns and community engagement initiatives. These programs can educate citizens on the impacts of climate change and empower them to participate in resilience-building efforts at the local level.

**g. International Collaboration:** The UN can facilitate regional and global collaborations, connecting Argentina with neighbouring countries facing similar climate challenges. International organizations can also offer resources and expertise for large-scale climate resilience projects.

**h. Early Warning Systems:** The UN can help Argentina develop and enhance its early warning systems to provide timely information and alerts about extreme weather events, enabling better preparedness and response.

**i. Promotion of Sustainable Practices:** The UN can promote and support sustainable agricultural practices, afforestation, and reforestation initiatives, as well as the transition to renewable energy sources. These measures not only enhance resilience but also contribute to greenhouse gas emission reduction.

**j. Disaster Risk Reduction:** Collaborating with the UN can enable Argentina to develop comprehensive disaster risk reduction strategies, which include infrastructure improvements, contingency planning, and community-based disaster risk management.

The above strategies can collectively form a comprehensive blueprint for Argentina to boost its climate resilience. Successful execution necessitates a synergy of government policies, active private sector participation, community engagement, and international collaboration. Through the adoption of a proactive and multifaceted approach, Argentina can more effectively equip itself to confront the challenges of climate change, safeguard its ecosystems, and ensure the welfare of its populace and economy amidst a shifting climate landscape.

“Effective climate action demands a blend of government policies, international collaboration, private sector involvement, and public awareness. Overcoming these hurdles will require sustained commitment from all segments of society. Argentina’s dedication to emissions reduction, climate adaptation, and the transition to cleaner energy sources is pivotal in securing a sustainable future for the nation and its diverse ecosystems. International cooperation and ongoing assessment of these endeavours are vital to ensuring their effectiveness and meaningful impact.”

## 7. Conclusion

Argentina’s heavy reliance on natural capital contributes to its vulnerability to climate change through agriculture and hydropower and to low-carbon transitions through the oil and gas industries. But it also presents opportunities for growth. Argentina, like numerous countries, is taking steps to combat climate change, including setting targets to reduce GHG emissions and promoting the use of renewable energy. Despite these efforts, the country faces significant challenges, particularly in sectors like agriculture and energy, necessitating coordinated action. While existing policies represent a positive start, they must be reinforced to match the urgency of the climate crisis. Effective climate action demands a blend of government policies, international collaboration, private sector involvement, and public awareness. Overcoming these hurdles will require sustained commitment from all segments of society. Argentina’s dedication to emissions reduction, climate adaptation, and the transition to cleaner energy sources is pivotal in securing a sustainable future for the nation and its diverse ecosystems. International cooperation and ongoing assessment of these endeavours are vital to ensuring their effectiveness and meaningful impact. ■

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