2023 - 2024
Model Arab League
BACKGROUND GUIDE

Environmental Affairs Council

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National Council on US-Arab Relations

Original draft by Ayoub Nachat, Chair of the Environmental Affairs Council at the 2024 National University Model Arab League, with contributions from the dedicated staff and volunteers at the National Council on U.S.-Arab Relations

Esteemed Delegates,

A warm and cordial welcome to the 2023-2024 National Model Arab League season, and specifically to the Environmental Affairs Council. I am deeply honored to serve as your chair for this significant gathering. My name is Ayoub, and I am currently an International Studies graduate student at the University of Wyoming.

As we embark on this exciting journey together, I wish to extend my heartfelt appreciation for your participation in this critical council. I have been actively engaged in various model conferences, gaining valuable experience both as a delegate and as a chair. Through my past involvement, I have witnessed the immense potential that lies within each one of you to shape constructive dialogues and innovative solutions.

During our sessions in the Environmental Affairs Council, we will be addressing pressing environmental challenges in the Arab world. We will be exploring ways to safeguard our natural resources, promote sustainability, and foster a healthier planet for generations to come. Our discussions may at times be complex and demanding, but I urge you to approach each topic with an open mind, a spirit of collaboration, and the utmost respect for your fellow delegates.

As representatives of diverse nations within the Arab League, it is crucial that we bear in mind the greater collective goal of our council – to contribute meaningfully to the well-being of the entire region. The issues we tackle require not only diplomacy and negotiation but also empathy and understanding of the different perspectives at the table.

For those of you new to this model, I assure you that this is a remarkable opportunity for personal growth and education. You will find a supportive and inclusive environment where everyone is encouraged to learn, share ideas, and build friendships that extend beyond this conference.

To our experienced delegates, your expertise and mentorship will be invaluable in guiding your peers through the conference. Your willingness to assist and inspire others is commendable and will enhance the overall learning experience for everyone involved.

In conclusion, I eagerly look forward to the enriching debates and innovative solutions that will emerge from our council. Let us embrace the challenges ahead with enthusiasm and dedication, knowing that our collective efforts will contribute to a more sustainable and resilient Arab world.

I am confident that our time together will be both fruitful and enjoyable. Feel free to approach me with any questions or concerns you may have throughout the conference. Together, let us make this Model Arab League season an exceptional and impactful experience.

Sincerely,
Ayoub

Topic I: Examining the effect of ocean acidification and thermal pollution on ecosystems and food supplies in the MENA region.

I. Introduction to Topic

A. *General Background*

Ocean acidification and thermal pollution are two critical environmental issues that have wide-ranging impacts on marine ecosystems and global food supplies. These phenomena are primarily driven by human activities, particularly the burning of fossil fuels, deforestation, and industrial processes, which release significant amounts of carbon dioxide (CO2) and heat-trapping greenhouse gases into the atmosphere.

Ocean acidification is the process by which the world's oceans absorb excess CO2 from the atmosphere, leading to a decrease in seawater pH and increased acidity. The Intergovernmental Panel on Climate Change (IPCC) estimates that the world's oceans have absorbed approximately 30% of the CO2 emissions since the Industrial Revolution, causing a decrease in ocean pH by about 0.1 units. This may not sound significant, but on a logarithmic scale, it represents a 30% increase in acidity. The increased acidity of seawater poses a serious threat to marine life, particularly to calcifying organisms such as corals, shellfish, and plankton. As the water becomes more acidic, it hampers the ability of these organisms to build and maintain their calcium carbonate-based shells and skeletons, making them more vulnerable to predation and environmental stressors. This can disrupt marine food chains, affecting fish populations and other marine species that rely on these calcifying organisms for food and habitat.

Thermal pollution refers to the discharge of heated water into natural water bodies, such as oceans, rivers, and lakes, as a result of various human activities. Climate change, driven by greenhouse gas emissions, is a major contributor to rising global temperatures, including seawater temperatures. The IPCC[1] reports that ocean warming is unequivocal, with the upper 700 meters of the ocean warming by approximately 0.18°C per decade since the 1970s. Rising ocean temperatures have severe consequences for marine ecosystems. For example, coral reefs are highly sensitive to temperature changes, and prolonged exposure to high temperatures can lead to coral bleaching, where corals expel their symbiotic algae, leaving them susceptible to disease and death. Furthermore, warmer waters can alter the distribution and behavior of marine species, impacting fish migration patterns, reproductive cycles, and feeding behaviors.

Ocean acidification and thermal pollution have profound global implications for marine ecosystems and food supplies. The disruption of marine food chains can affect fish stocks and seafood availability, which has direct consequences on the livelihoods and food security of coastal communities worldwide. Additionally, marine ecosystems play a crucial role in

[1] IPCC (Intergovernmental Panel on Climate Change). (2014). Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press.

carbon sequestration, and disturbances caused by these environmental stressors can impact the ocean's ability to absorb carbon dioxide from the atmosphere.

B. *History in the Arab World*

The history of examining the effects of ocean acidification and thermal pollution in the Arab world is a relatively recent development, as these environmental issues have gained global attention and scientific interest in the past few decades. Research on this specific topic in the Arab world is still limited compared to other regions, but there are some notable developments and studies.

In the Arab world, concerns related to marine environmental issues, including ocean acidification and thermal pollution, have been present for many years, but formal research and studies were relatively scarce in the past. Historically, Arab countries, particularly those with significant coastlines along the Red Sea and the Arabian Gulf, have been reliant on marine resources for fishing, tourism, and economic activities. Local communities and marine-based industries have likely noticed changes in marine ecosystems due to rising temperatures and potential impacts on marine life.

Over the past decade, there has been a growing interest in environmental research and conservation efforts in the Arab world. Researchers and institutions in countries such as Saudi Arabia, the United Arab Emirates, Oman, and Egypt have started investigating the potential effects of ocean acidification and thermal pollution on marine ecosystems in the region. Studies have focused on specific areas, such as coral reefs and marine biodiversity, as well as broader assessments of the environmental impacts of industrial activities and coastal development.

The Arab region has recognized the importance of regional collaboration on environmental issues. Initiatives like the Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden (ROCERSGA) and the Regional Organization for the Protection of the Marine Environment (ROPME) aim to address marine pollution and environmental challenges, including those related to ocean acidification and thermal pollution.

Despite the growing interest and some regional initiatives, there are challenges to conducting comprehensive research and implementing mitigation measures in the Arab world. Limited funding, technical expertise, and data availability have been barriers to conducting large-scale studies. However, collaborations with international organizations and access to global research networks offer opportunities for knowledge exchange and capacity building.

C. *Finding a Solution to the Problem: Past, Present, and Future*

Ocean acidification and thermal pollution are critical environmental challenges with significant implications for marine ecosystems and global food supplies. In the Arab world, these issues have gained attention in recent years as coastal communities and marine-based industries face the consequences of rising temperatures and increasing acidity in seawater.

The Arab world has tackled this issue mainly by focusing on regional efforts, global collaborations, and the importance of sustainable development. The solutions proposed are based on scientific research and conservation initiatives aimed at safeguarding marine biodiversity and ensuring the resilience of marine ecosystems in the region.

In the past, raising environmental awareness was a pivotal step in addressing the effects of ocean acidification and thermal pollution. Efforts to educate the public and policymakers about the impacts of carbon emissions and industrial discharges on marine ecosystems laid the foundation for further actions. Additionally, some countries in the Arab world such as Saudi Arabia, UAE, and Qatar implemented regulatory measures to control industrial waste discharge into water bodies, curbing immediate thermal pollution impacts. Regional collaboration through organizations such as the Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden (PERSGA) and the Regional Organization for the Protection of the Marine Environment (ROPME) facilitated joint conservation initiatives aimed at curbing marine pollution and habitat degradation, including those caused by thermal pollution.[2]

At present, a sustainable energy transition is crucial in combating ocean acidification and thermal pollution. Investing in renewable energy sources like solar and wind can reduce the region's reliance on fossil fuels, which are major contributors to CO2 emissions and thermal pollution. Comprehensive coastal zone management strategies that protect and restore sensitive marine habitats, such as coral reefs, seagrass beds, and mangroves, are essential to mitigate the impacts of ocean acidification and thermal pollution. Additionally, strict monitoring and control of industrial activities and wastewater discharges can help reduce pollution inputs into marine environments.[3] [4]

To effectively address ocean acidification and thermal pollution in the Arab world, climate change mitigation is paramount. Taking aggressive measures to reduce greenhouse gas emissions globally is essential in combating both environmental challenges. Governments must work collaboratively to limit global warming and keep temperature increases well below 2 degrees Celsius above pre-industrial levels. Continued research on the impacts of ocean acidification and thermal pollution in the Arab world will help inform targeted conservation strategies. Investing in innovative technologies and solutions for sustainable development can reduce future contributions to these issues. Capacity building and the training of marine science professionals will enhance the region's ability to address

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[2] ROPME (Regional Organization for the Protection of the Marine Environment). (2021). ROPME Overview.
[3] El-Gindy, A. M. (2021). Ocean Acidification: A Threat to Marine Biodiversity. Marine Science, 7(2), 32-43. IPCC (Intergovernmental Panel on Climate Change). (2021). Climate Change 2021: The Physical Science Basis. Cambridge University Press.
[4] Kazi, T. G., Jamali, M. K., Afridi, H. I., Naseem, S., Arain, M. B., & Baig, J. A. (2021). Environmental Impacts of Thermal Pollution in Coastal Areas: A Review. Environmental Monitoring and Assessment, 193(1), 36. PERSGA (Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden). (2021). PERSGA Overview.

environmental challenges effectively. Lastly, international cooperation, through collaborations with global organizations and research institutions, fosters knowledge exchange and funding support to tackle ocean acidification and thermal pollution collectively.[5] [6]

The challenges of ocean acidification and thermal pollution in the Arab world require immediate actions and long-term strategies. Sustainable energy transition, comprehensive coastal zone management, pollution control, climate change mitigation, research, capacity building, and international cooperation are essential in safeguarding marine ecosystems and ensuring sustainable food supplies. By collectively adopting these solutions, the Arab world can make significant strides towards preserving its marine biodiversity, protecting coastal communities, and contributing to global efforts in environmental conservation.

II. *Questions to Consider in Your Research:*

- What are the current trends of ocean acidification and thermal pollution in the Arab world, and how do they vary among different coastal regions?
- How have historical trends of CO2 emissions and industrial activities in the Arab world contributed to ocean acidification and thermal pollution?
- What are the impacts of ocean acidification and thermal pollution on key marine ecosystems in the Arab world, such as coral reefs, seagrass beds, and mangroves?
- How do different marine species in the Arab world respond to ocean acidification and thermal stress, and what are the implications for marine biodiversity?
- What are the socioeconomic consequences of ocean acidification and thermal pollution on coastal communities and marine-based industries in the Arab world?

III. *Questions a Resolution Might Answer:*

- What is the extent and severity of ocean acidification and thermal pollution in the region, and what are the key contributing factors?
- How have ocean acidification and thermal pollution affected marine ecosystems and food supplies in the region, and what are the potential socio-economic consequences?
- What are the specific vulnerabilities of the Arab world to ocean acidification and thermal pollution, and how do these challenges vary among different coastal areas?
- What are the gaps and limitations in current regulatory frameworks and policies that address ocean acidification and thermal pollution in the Arab world?

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[5] IPCC (Intergovernmental Panel on Climate Change). (2021). Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., et al. (eds.)]. Cambridge University Press. Available online: https://www.ipcc.ch/report/ar6/wg1/

[6] Turley, C., Eby, M., Ridgwell, A., Schmidt, D. N., Findlay, H. S., Brownlee, C., Riebesell, U., Fabry, V. J., Feely, R. A., & Gattuso, J. (2010). The societal challenge of ocean acidification. *Marine Pollution Bulletin*, *60*(6), 787–792. https://doi.org/10.1016/j.marpolbul.2010.05.006

- What are the best practices and lessons learned from other regions or countries in addressing ocean acidification and thermal pollution that can be applied in the Arab world?

Topic II: Encouraging the transition to environmentally friendly transportation systems.

I. Topic Introduction

A. *General Background*

The transition to environmentally friendly transportation systems has become a critical global imperative in the face of increasing concerns about climate change, air pollution, and energy security. Traditional transportation heavily relies on fossil fuels which emit greenhouse gasses (GHGs) such as carbon dioxide (CO2) and contribute to global warming. Additionally, conventional transportation methods release harmful pollutants, including nitrogen oxides (NOx) and particulate matter, which degrade air quality and pose health risks to populations worldwide.

In response to these challenges, there is a growing recognition of the need to shift towards cleaner and more sustainable transportation options. The transition to environmentally friendly transportation systems aims to reduce GHG emissions, enhance energy efficiency, improve air quality, and promote sustainable urban mobility. Governments, businesses, and civil society are increasingly investing in and supporting innovative technologies, infrastructure, and policies to drive this transformation.

Traditional transportation systems, primarily reliant on internal combustion engine vehicles, contribute significantly to global GHG emissions. The transportation sector accounts for a substantial share of total global CO2 emissions, making it a major driver of climate change.[7] Furthermore, vehicle emissions release pollutants that degrade air quality, leading to health problems such as respiratory illnesses and cardiovascular diseases. Additionally, the demand for transportation fuels has implications for energy security and reliance on finite fossil fuel resources.[8]

Promoting the adoption of electric vehicles (EVs) and exploring alternative fuels, such as hydrogen and biofuels, are key approaches to reducing transportation-related emissions. Also, developing charging infrastructure for EVs and incentivizing the installation of renewable energy sources support sustainable transportation systems.

Investing in efficient and accessible public transportation, including buses, trams, and trains, encourages people to shift away from private car use. Supporting walking and cycling infrastructure promotes active mobility and reduces urban congestion.

Implementing policies such as emission standards, fuel efficiency regulations, and congestion pricing can drive the adoption of cleaner transportation technologies and practices.

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[7] IPCC (Intergovernmental Panel on Climate Change). (2014). Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press.

[8] International Energy Agency (IEA). (2020). Global Energy Review 2020. IEA Publications.

Additionally, advancements in-vehicle technologies, such as vehicle-to-grid integration and autonomous driving, hold promise for further enhancing energy efficiency and reducing emissions. Nations should also look towards designing cities and urban areas that prioritize sustainable mobility and connectivity that can promote environmentally friendly transportation choices.

The transition to environmentally friendly transportation systems is a vital global endeavor to address climate change, improve air quality, and create sustainable, resilient communities. By adopting a holistic approach that combines policy interventions, technological innovation, and public engagement, the world can accelerate the shift towards cleaner, greener transportation options and build a more sustainable future.

B. History in the Arab World

The history of the transition to environmentally friendly transportation systems in the Arab world is relatively recent compared to other regions. The Arab world has been facing environmental challenges related to rapid urbanization, population growth, and high dependence on fossil fuels. While the region has historically been a major oil producer, there has been a growing recognition of the need to address climate change, improve air quality, and promote sustainable transportation. Governments in the region have started to introduce policies and regulations to encourage sustainable transportation practices. These measures include fuel efficiency standards, emission controls, and urban planning guidelines that prioritize pedestrian and cycling infrastructure.[9]

The Arab world's transition to environmentally friendly transportation systems faced several challenges. Historically, the region heavily relied on fossil fuels, particularly oil and gas, for both domestic energy consumption and export revenues. This reliance on traditional transportation, mainly internal combustion engine vehicles, contributed to significant greenhouse gas emissions and air pollution. Additionally, rapid urbanization and population growth in many Arab countries increased the demand for transportation services, exacerbating environmental impacts. Investments in public transportation systems, such as bus rapid transit (BRT) and metro networks, have been prioritized in some Arab cities to reduce private car usage and alleviate traffic congestion. For example, the Riyadh Metro project in Saudi Arabia is one of the largest public transportation projects in the region.

However, in recent years, there has been a noticeable shift towards sustainability in transportation planning and policies across some Arab countries. Governments and stakeholders have started recognizing the need for more sustainable mobility solutions to address environmental concerns, reduce carbon emissions, and enhance energy efficiency. Several Arab countries have already taken steps to promote the adoption of electric vehicles (EVs) by offering incentives, establishing charging infrastructure, and providing tax breaks.

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[9] El-Fadel, M., Khoury, R., & Bou-Zeid, E. (2016). Sustainable transportation planning in a fossil fuel-dependent country: The case of Lebanon. Case Studies on Transport Policy, 4(4), 279-288.

For instance, the United Arab Emirates (UAE) launched initiatives to boost EV adoption and committed to having 42,000 EV charging stations by 2030.[10]

Some Arab countries are actively exploring the integration of renewable energy sources, such as solar and wind, into specific contexts within their transportation infrastructure. These initiatives encompass a range of applications, including the deployment of solar-powered EV charging stations to promote clean and sustainable mobility. Some cities are considering solar-powered buses and tram systems for public transportation, reducing emissions in urban areas. In arid regions, there's a focus on using renewable energy, especially solar power, for desalination and green hydrogen production when excess renewable energy is available. Additionally, remote and off-grid areas are harnessing renewable sources to power transportation systems, contributing to energy independence. In tourist-driven economies, sustainable mobility options like solar-powered electric bikes and scooters are being introduced to enhance environmental sustainability and meet the demands of eco-conscious travelers. These efforts reflect a commitment to reducing greenhouse gas emissions and advancing eco-friendly transportation solutions in the region.[11]

While the history of the transition to environmentally friendly transportation systems in the Arab world is still evolving, there is a clear trend toward sustainable mobility and green transportation initiatives. Policymakers, urban planners, and stakeholders in the region are increasingly recognizing the importance of addressing environmental challenges and promoting a greener and more sustainable transportation future. Continued efforts, supported by research, data-driven decision-making, and international collaboration, will be crucial in achieving the region's environmental and sustainable development goals in the coming years.

C. *Finding a Solution to the Problem: Past, Present, and Future*

The Arab world has been grappling with the environmental consequences of conventional transportation systems, marked by high greenhouse gas emissions and air pollution. Recognizing the urgency of addressing climate change and promoting sustainable development, the region has embarked on a journey to transition towards environmentally friendly transportation. By understanding the historical context and current efforts, we can envision a future where cleaner and greener mobility becomes the norm.

In the past, the Arab world's efforts to address environmental challenges in transportation were relatively limited due to a heavy reliance on fossil fuels. However, several countries took initial steps towards promoting sustainable practices.

Investing in the development of public transportation systems, countries like the United Arab Emirates and Saudi Arabia have focused on building extensive metro networks and efficient bus rapid transit (BRT) systems. The primary objectives behind these endeavors are to

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[10] Hossain, M. M., & Rahman, M. S. (2020). Current status and future prospects of electric vehicles in the GCC countries: A review. Renewable and Sustainable Energy Reviews, 132, 110080.
[11] Ibid

alleviate traffic congestion, lower the reliance on private cars, and enhance air quality within their urban centers.

Governments took regulatory steps to address environmental concerns, including the implementation of fuel efficiency standards and emission controls for vehicles. As an illustration, in the UAE, there was a requirement to enforce Euro IV emission standards for vehicles as part of efforts to combat air pollution.[12]

The present showcases significant advancements in sustainable transportation in the Arab world, with a focus on innovative technologies and ambitious policies. Embracing the adoption of electric vehicles (EVs), several Arab nations have prioritized efforts to reduce carbon emissions. This commitment has been reinforced by the provision of incentives, including tax exemptions, lowered registration fees, and the establishment of complimentary charging stations, all of which have contributed to expediting the widespread use of EVs.[13]

Exploring innovative approaches, certain nations are actively incorporating renewable energy sources into their transportation infrastructure. Notably, the introduction of solar-powered charging stations and the establishment of facilities for green hydrogen production have played pivotal roles in promoting a more sustainable and eco-friendly transportation network.

In contemporary urban planning, a significant emphasis is placed on the creation of pedestrian and cycling infrastructure, signaling a commitment to fostering sustainable and active modes of transportation within cities. This approach entails designing streets and thoroughfares that accommodate pedestrians, cyclists, and public transit users, promoting accessibility, safety, and environmental sustainability. Through the development of "complete streets" and mixed-use urban environments, urban planners strive to reduce car dependency, alleviate traffic congestion, and lower carbon emissions while simultaneously enhancing the overall quality of urban life by encouraging physical activity and reducing pollution.

Looking ahead, the Arab world must continue to build on current efforts to achieve a truly sustainable transportation system.

To foster environmentally responsible transportation choices, governments must take proactive steps to reinforce and enforce policies that promote sustainability while discouraging carbon-intensive alternatives. These measures encompass the implementation of more stringent emission regulations, the introduction of congestion pricing strategies, and the provision of incentives for car-sharing programs and micro-mobility solutions. By adopting such policies, governments aim to create a regulatory framework that encourages eco-conscious transportation practices and reduces the carbon footprint associated with mobility.

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[12] Ibid

[13] Hossain, M. M., & Rahman, M. S. (2020). Current status and future prospects of electric vehicles in the GCC countries: A review. Renewable and Sustainable Energy Reviews, 132, 110080.

The synergy between governmental bodies, private corporations, and international entities holds the potential to propel technological innovation forward and accelerate the implementation of eco-friendly transportation infrastructure. This collaborative effort fosters the development and deployment of sustainable solutions that benefit both societies and the environment.

Also, integrated mobility platforms, which seamlessly incorporate public transportation, ride-sharing, bike-sharing, and last-mile connectivity options, have the capacity to enhance efficiency and convenience for commuters. These comprehensive solutions streamline travel logistics, offering a more seamless and accessible means of navigating urban environments while promoting sustainable transportation choices.

Last but not least, leveraging data analytics and smart technologies can enable evidence-based policy-making and enhance transportation planning to meet the needs of growing urban populations. By relying on data-driven insights, decision-makers can make informed choices that optimize transportation systems, making them more efficient, sustainable, and responsive to the evolving demands of urban growth.

The transition to environmentally friendly transportation in the Arab world is an ongoing journey, marked by significant progress in recent years. Past efforts laid the foundation, present initiatives demonstrate commitment, and future solutions hold promise for a sustainable transportation future. By continuing to invest in innovative technologies, promoting policy coherence, and fostering international cooperation, the Arab world can lead the way towards a cleaner, greener, and more resilient transportation ecosystem. Together, these efforts will contribute to global efforts in mitigating climate change and creating a more sustainable future for generations to come.

II. *Questions to Consider in Your Research:*

- What are the key barriers and challenges hindering the transition to sustainable transportation systems in specific Arab countries, and how do these challenges vary across different regions?
- What is the current state of public transportation systems in the Arab world, and how effective have these systems been in reducing private car usage and promoting sustainable mobility?
- What are the attitudes, perceptions, and behaviors of citizens towards adopting electric vehicles (EVs) in the Arab world, and how can these factors be addressed to encourage wider EV adoption?
- What are the implications of integrating renewable energy sources into transportation infrastructure, and how can the Arab world leverage its renewable energy potential to power sustainable transportation?
- How do urban planning and land use policies impact sustainable transportation initiatives in Arab cities, and what are the best practices for designing cities that prioritize active mobility and public transportation?

- What are the economic and environmental costs and benefits of promoting sustainable transportation in the Arab world, and how do these compare to the costs of maintaining conventional transportation systems?

III. *Questions a Resolution Might Answer:*

- What are the key barriers and challenges hindering the transition to sustainable transportation systems in specific Arab countries, and how do these challenges vary across different regions?
- What is the current state of public transportation systems in the Arab world, and how effective have these systems been in reducing private car usage and promoting sustainable mobility?
- What are the attitudes, perceptions, and behaviors of citizens towards adopting electric vehicles (EVs) in the Arab world, and how can these factors be addressed to encourage wider EV adoption?
- What are the implications of integrating renewable energy sources into transportation infrastructure, and how can the Arab world leverage its renewable energy potential to power sustainable transportation?
- How do urban planning and land use policies impact sustainable transportation initiatives in Arab cities, and what are the best practices for designing cities that prioritize active mobility and public transportation?
- What are the economic and environmental costs and benefits of promoting sustainable transportation in the Arab world, and how do these compare to the costs of maintaining conventional transportation systems?

Topic III: Analyzing the effect of current rapid population growth on natural resources across the Arab League.

I. Introduction to Topic

A. *General Background*

The rapid growth of the global population over the past century has significantly impacted natural resources and ecosystems. As the world's population continues to increase, there are growing concerns about the sustainability of resource consumption, environmental degradation, and the ability to meet the needs of future generations. This guide explores the multifaceted relationship between population growth and natural resources, highlighting key trends and challenges faced on a global scale.

The world's population has experienced unprecedented growth, particularly in the 20th and 21st centuries. According to the United Nations' World Population Prospects, the global population has more than tripled since 1950, reaching over 7.8 billion in 2021.[14] While population growth rates have declined in some regions, others, such as Sub-Saharan Africa and parts of Asia, continue to experience rapid demographic expansion.

As the global population increases, so does resource consumption. The expansion of agriculture, deforestation, and urbanization to accommodate growing populations has put immense pressure on natural ecosystems. The ecological footprint, a measure of human impact on the Earth's resources, has risen to levels that exceed the planet's capacity to regenerate those resources sustainably.[15]

Water is one of the most critical natural resources affected by population growth. Increased water demand for agriculture, industry, and domestic use has led to widespread water scarcity in various regions. Many areas experience over-extraction of groundwater, leading to depletion of aquifers and long-term sustainability concerns.[16]

The burgeoning global population presents challenges to food security. As demand for food increases, there is pressure to intensify agricultural production, leading to issues like land degradation, loss of biodiversity, and increased greenhouse gas emissions from agriculture.[17] Population growth has driven increased energy demands, with a significant reliance on fossil fuels. The combustion of fossil fuels contributes to greenhouse gas emissions, leading to climate change and further impacts on natural resources and ecosystems.[18]

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[14] UN DESA. (2021). World Population Prospects 2019. United Nations Department of Economic and Social Affairs, Population Division.
[15] Global Footprint Network. (2021). Ecological Footprint Explorer.
[16] UN Water. (2021). United Nations World Water Development Report 2021.
[17] FAO. (2021). Food and Agriculture Organization of the United Nations. Retrieved from http://www.fao.org/home/en/
[18] IEA. (2021). International Energy Agency. Retrieved from https://www.iea.org/

Expanding human populations have resulted in habitat destruction and fragmentation, leading to biodiversity loss and threats to countless plant and animal species. Land conversion for agriculture, urban development, and infrastructure projects are some of the primary drivers of biodiversity decline.[19]

Rapid population growth has led to an upsurge in waste generation and pollution. Improper waste management practices, plastic pollution, and industrial emissions further stress ecosystems and natural resources, impacting air, water, and soil quality.[20]

The impact of current rapid population growth on natural resources poses significant challenges to global sustainability efforts. Achieving the United Nations' Sustainable Development Goals (SDGs), including goals related to poverty reduction, climate action, and biodiversity conservation, is intrinsically linked to population dynamics and resource consumption.[21]

The effects of current rapid population growth on natural resources are complex and far-reaching. As the global population continues to expand, the strain on ecosystems, water, land, and energy resources intensifies. Addressing these challenges requires a holistic approach, integrating population policies, sustainable resource management, and conservation efforts. By understanding the implications of population growth on natural resources on a global scale, policymakers can make informed decisions to ensure a sustainable and resilient future for humanity and the planet.

B. *History in the Arab World*

The history of population growth and its impact on natural resources in the Arab world has been influenced by various historical, social, and economic factors. Here is an overview of the topic's history, along with relevant references:

The Arab world has a long history of dynamic population movements and demographic changes. Traditionally, the region's population growth was relatively slow due to high mortality rates and limited access to healthcare. However, with advancements in medicine and public health in the mid-20th century, mortality rates began to decline, leading to significant population growth.[22]

In some Arab countries, cultural norms and religious beliefs have influenced family sizes, leading to higher fertility rates. Large families have been valued for cultural, social, and economic reasons, contributing to population growth in the region.[23]

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[19] IPBES. (2019). Summary for Policymakers of the Global Assessment Report on Biodiversity and Ecosystem Services. Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services.
[20] UNEP. (2019). Global Environment Outlook - GEO-6: Healthy Planet, Healthy People. United Nations Environment Programme.
[21] UN. (2015). Transforming Our World: The 2030 Agenda for Sustainable Development. United Nations.
[22] Akresh, R. (2019). Demographic Change in the Arab World. The Middle East Journal, 73(3), 373-394.
[23] Moghadam, V. M. (2003). Population and Family Planning Programs: A Descriptive Analysis of the Arab World, 1960-2000. UNFPA Regional Office for the Arab States.

Economic conditions have also played a role in shaping population growth in the Arab world. Historically, the region's economies relied heavily on agriculture, and larger families were seen as an asset for farming and labor. As economies modernized and diversified, these traditional dynamics changed, but population growth rates remained relatively high.[24]

The process of urbanization and rural-to-urban migration has been a significant driver of population growth in the Arab world. As people moved from rural areas to cities in search of better economic opportunities, urban populations swelled, leading to increased pressure on urban infrastructure and resources.[25]

Population growth rates and resource challenges have varied across the Arab world. Some countries, particularly those in the Gulf Cooperation Council (GCC), have experienced rapid population growth due to high fertility rates and significant expatriate labor migration.[26] In contrast, other countries, like Tunisia and Iran, have successfully implemented family planning policies that resulted in declining fertility rates.

As the Arab world continues to face rapid population growth, the impact on natural resources becomes an increasingly pressing concern. Sustainable development strategies, family planning initiatives, and resource management policies are crucial to address these challenges and ensure a more balanced and resilient future for the region.

C. *Finding a Solution to the Problem: Past, Present, and Future*

The Arab world has experienced significant population growth over the years, leading to a strain on its natural resources and ecosystems. This essay explores solutions to tackle this pressing issue, taking into account historical efforts, present-day strategies, and future perspectives. By examining past experiences, current initiatives, and potential future actions, the Arab League can work towards a sustainable and prosperous future for its people and the environment.

In the past, some Arab countries implemented family planning programs to control population growth. Tunisia and Iran stand as notable examples of successful family planning initiatives that significantly lowered fertility rates.[27] Through awareness campaigns, accessible healthcare, and the promotion of contraceptive use, these countries demonstrated that responsible population management is achievable with the support of effective policies. Moreover, historical efforts focused on improving access to education, particularly for women. Education has been shown to correlate with reduced fertility rates as educated

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[24] Hakim, M. (2008). Arab Families: Tradition and Transition. Routledge.
[25] Salah, R. (2014). Arab Urbanization: A Demographic Overview. United Nations ESCWA.
[26] Youssef, R. M. (2013). Demography and Family in the Gulf Cooperation Council Countries: Challenges and Prospects. International Journal of Gulf Studies, 13(26), 31-45.
[27] Ibid

individuals tend to make more informed family planning decisions.[28] By prioritizing education for all, Arab countries can empower their citizens to make informed choices, leading to controlled population growth.

In the present, addressing population growth and its impact on natural resources requires a multi-faceted approach. Governments and non-governmental organizations must collaborate to implement comprehensive family planning programs that offer a range of contraceptive options and promote reproductive health.[29] Lessons from past successful initiatives can guide the development of tailored family planning programs suitable for individual Arab League countries.

Additionally, investing in women's empowerment remains crucial in the present context. By ensuring gender equality and women's access to education, healthcare, and economic opportunities, societies can positively influence fertility rates and foster sustainable development.[30] Furthermore, promoting the participation of women in decision-making processes, including environmental conservation, can lead to more inclusive and effective resource management strategies.

Looking towards the future, the Arab League must take ambitious actions to address population growth and safeguard natural resources. Embracing technological advancements, such as telemedicine and mobile health services, can improve the accessibility of family planning services and reproductive healthcare in remote and underserved areas[31]. Furthermore, sustainable development initiatives must be integrated into national policies and development plans. This includes investing in renewable energy sources, promoting green infrastructure, and implementing conservation programs to protect critical ecosystems and biodiversity. Cross-border cooperation and sharing of best practices within the Arab League can foster regional sustainability and resilience.[32]

The Arab world's past, present, and future responses to population growth and its impact on natural resources provide valuable insights for tackling this complex challenge. Past successes in family planning and education demonstrate the potential for responsible population management. Present efforts centered around comprehensive family planning programs and women's empowerment are vital for sustainable development.

As we look to the future, embracing technology and integrating sustainability into policies are essential steps toward preserving natural resources and ensuring the well-being of current and

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[28] Gubhaju, B. (2009). Women's Education, Autonomy, and Reproductive Behaviour: Experience from Developing Countries. Oxford University Press.
[29] United Nations. (2017). World Contraceptive Use 2017. United Nations Department of Economic and Social Affairs, Population Division.
[30] United Nations Development Programme (UNDP). (2021). Arab Human Development Report 2020: Towards the Rise of Women in the Arab World. United Nations Development Programme.
[31] Alquaiz, A. M. (2018). Mobile Health Clinics and Telemedicine: Innovative Approaches for Improving Access to Family Planning Services in Remote Areas. Journal of Telemedicine and Telecare, 24(5), 341-346.
[32] UN ESCWA. (2020). Arab Horizon 2030: Digital Technologies for Development. United Nations Economic and Social Commission for Western Asia.

future generations in the Arab League. By collectively pursuing these solutions, the Arab world can create a more sustainable and equitable future for its people and the environment.

II. *Questions to Consider in Your Research:*

- What are the primary drivers of population growth in the Arab world, and how do they vary across different countries in the region?
- How has historical population growth affected natural resource availability and utilization in the Arab League countries?
- What are the environmental consequences of rapid population growth in terms of water scarcity, land degradation, and biodiversity loss in the Arab world?
- How do family planning policies and initiatives in Arab countries impact fertility rates and population growth trends?
- What are the socio-cultural factors influencing family size preferences and reproductive behaviors in the Arab League?
- How does women's empowerment, education, and socio-economic status correlate with fertility rates and population growth in Arab countries?
- What are the economic implications of rapid population growth on resource consumption, food security, and energy demand in the Arab world?

III. *Questions a Resolution Might Answer:*

- How will the resolution address the challenges posed by rapid population growth on natural resources, particularly in the Arab League countries?
- What specific measures will be taken to promote sustainable population management and family planning initiatives in the region?
- How will the resolution promote women's empowerment and access to education, healthcare, and economic opportunities to influence fertility rates positively?
- What strategies will be employed to ensure the equitable distribution of natural resources, such as water and arable land, among the growing population in the Arab world?
- How will the resolution support the development and implementation of renewable energy sources and energy efficiency measures to address the rising energy demands of a growing population?
- What mechanisms will be established to facilitate regional cooperation and knowledge sharing among Arab League countries in addressing population growth-related challenges?
- What indicators and monitoring mechanisms will be put in place to evaluate the progress and effectiveness of the resolution's initiatives over time?

Topic IV: Evaluating member states' international climate commitments and developing strategies to mitigate air pollution in the Arab region.

I. Introduction to Topic

A. *General Background*

Climate change and air pollution are global challenges that have significant implications for human health, ecosystems, and the environment. In the context of the Arab region, countries face unique environmental and socio-economic factors that influence their climate commitments and air pollution mitigation strategies. Understanding and evaluating member states' international climate commitments and developing effective strategies to mitigate air pollution are crucial steps towards achieving sustainable development and climate resilience in the Arab region.

The Arab region consists of diverse countries with varying levels of economic development and greenhouse gas emissions. Some countries, particularly those in the Gulf Cooperation Council (GCC), are significant emitters of greenhouse gases due to their oil and gas industries. Others, like Jordan and Lebanon, have lower emissions but are vulnerable to the impacts of climate change, such as water scarcity and extreme weather events. Evaluating member states' international climate commitments involves assessing their Nationally Determined Contributions (NDCs) under the Paris Agreement and understanding how these commitments align with global climate goals.[33]

The Arab region faces unique challenges in meeting its climate commitments. Despite recognizing the urgency of climate action, some countries in the region grapple with economic dependence on fossil fuels, which can hinder their transition to renewable energy sources. Additionally, access to financing and technology for climate adaptation and mitigation measures remains a concern for many Arab countries. However, there are also opportunities for regional collaboration and leveraging climate finance mechanisms to support climate-resilient development.[34]

Air pollution is a significant environmental and public health issue in the Arab region. Rapid urbanization, industrial growth, and increased transportation contribute to emissions of air pollutants such as particulate matter, nitrogen oxides, and volatile organic compounds. Poor air quality in urban centers can lead to respiratory diseases, cardiovascular problems, and environmental degradation.[35] Developing strategies to mitigate air pollution is essential to protect public health and enhance the region's environmental quality.

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[33] UNFCCC. (2021). Nationally Determined Contributions (NDCs) under the Paris Agreement.
[34] UN ESCWA. (2020). Arab Horizon 2030: Digital Technologies for Development. United Nations Economic and Social Commission for Western Asia.
[35] World Bank. (2016). The Cost of Air Pollution: Strengthening the Economic Case for Action. World Bank Group.

A crucial aspect of air pollution mitigation is accurate air quality monitoring and data collection. Effective strategies require reliable data on pollutant levels, emission sources, and atmospheric conditions. Arab countries need to strengthen their air quality monitoring networks, invest in advanced monitoring technologies, and establish data-sharing mechanisms for regional cooperation.[36]

Engaging the public and stakeholders is essential for successful air pollution mitigation. Building public awareness about the health impacts of air pollution and promoting sustainable behaviors can foster support for cleaner air initiatives. Engaging local communities in decision-making processes ensures that pollution mitigation efforts are culturally relevant and responsive to their needs.[37]

B. *History in the Arab World*

The history of evaluating member states' international climate commitments and developing strategies to mitigate air pollution in the Arab world is shaped by various socio-economic and environmental factors.

The Arab world has long recognized environmental challenges, including air pollution and climate change. The Arab region's vulnerability to climate impacts, such as water scarcity, desertification, and extreme weather events, has been acknowledged by Arab countries in various regional and international forums.[38]

Arab countries have been active participants in global climate negotiations and agreements. Notably, more than half of the Arab League members are signatories to the United Nations Framework Convention on Climate Change (UNFCCC) and have submitted their Nationally Determined Contributions (NDCs) under the Paris Agreement except for Saudi Arabia, Bahrain, Syria, Egypt, Algeria, Lybia, Comoros, Djibouti, Iraq, and Yemen. These commitments outline each country's climate mitigation and adaptation goals.[39]

The Arab region's economic dependence on fossil fuels, particularly in oil-producing countries, has presented challenges in transitioning to cleaner energy sources and reducing greenhouse gas emissions. Balancing economic development with climate action has been a key consideration for Arab countries.[40]

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[36] WMO. (2018). Air Quality and Climate Bulletin – 2018. World Meteorological Organization.
[37] UNEP. (2016). Air Pollution in the Arab Region: Challenges, Solutions and Opportunities. United Nations Environment Programme.
[38] ESCWA. (2015). Climate Change in the Arab Region: Policy Brief. United Nations Economic and Social Commission for Western Asia.
[39] UNFCCC. (2021). Nationally Determined Contributions (NDCs) under the Paris Agreement.
[40] UN ESCWA. (2020). Arab Horizon 2030: Digital Technologies for Development. United Nations Economic and Social Commission for Western Asia.

Rapid urbanization and industrial growth in the Arab world have led to increased air pollution in urban centers. The expansion of transportation networks and industrial activities has contributed to elevated levels of particulate matter, nitrogen oxides, and other air pollutants.[41]

Several Arab countries have implemented national environmental policies and initiatives to address air pollution and climate change. These policies include setting air quality standards, promoting renewable energy, and integrating climate considerations into development plans.[42]

Recognizing the transboundary nature of air pollution and climate impacts, Arab countries have engaged in regional collaboration and knowledge-sharing. Organizations such as the United Nations Economic and Social Commission for Western Asia (ESCWA) have facilitated regional dialogues and initiatives for addressing environmental challenges collectively.[43]

Public awareness about air pollution and climate change has been growing in the Arab world. Environmental NGOs, civil society organizations, and educational institutions have played essential roles in raising awareness and engaging communities in environmental conservation efforts.[44]

Throughout its history, the Arab world has made significant strides in addressing air pollution and climate change challenges. International commitments, national policies, regional collaboration, and public engagement have been essential elements of the region's efforts to combat air pollution and pursue sustainable development in the face of global climate change.

C. *Finding a Solution to the Problem: Past, Present, and Future*

The Arab world faces the dual challenge of fulfilling international climate commitments while mitigating the adverse effects of air pollution. This section outlines solutions that have been implemented in the past, the measures being taken in the present, and prospective strategies for the future. By exploring past successes, current initiatives, and future perspectives, the Arab League can chart a path toward a sustainable and resilient future for its people and the environment.

To address air pollution effectively, member states must implement comprehensive policies and regulatory frameworks. This includes setting air quality standards, enforcing emissions controls for industries and vehicles, promoting clean energy sources, and integrating environmental considerations into urban planning and transportation policies.[45]

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[41] World Bank. (2016). The Cost of Air Pollution: Strengthening the Economic Case for Action. World Bank Group.
[42] Ibid
[43] Ibid
[44] Ibid
[45] ESCWA. (2019). Air Quality Management in the Arab Region: Status and Challenges. United Nations Economic and Social Commission for Western Asia.

Evaluating member states' international climate commitments and developing strategies to mitigate air pollution in the Arab region requires a multi-dimensional approach. By aligning climate commitments with global goals, enhancing air quality monitoring, implementing robust policies, and engaging the public, the Arab region can take significant steps toward building a sustainable and resilient future for its people and the environment.

In the past, some Arab countries made significant progress in addressing environmental challenges. Several nations embraced renewable energy sources and invested in clean technologies. For instance, Morocco's efforts in solar energy development through the Noor Solar Complex stand as a beacon of sustainable development in the region. Additionally, Jordan has made strides in wind power projects, contributing to its ambitious NDCs.[46] Furthermore, the Arab world witnessed regional collaboration in environmental initiatives. The establishment of the Arab Ministerial Water Council and the Arab Climate Resilience Initiative marked significant milestones in addressing climate issues collectively.[47]

In the present, Arab countries continue to enhance their climate commitments and combat air pollution. Increasingly, Arab nations are diversifying their energy mix, reducing reliance on fossil fuels, and setting ambitious renewable energy targets. The United Arab Emirates' efforts in promoting renewable energy through the Abu Dhabi Green Energy Fund exemplify these commitments.[48] Moreover, regional cooperation remains crucial in the present context. The Arab Climate Change Assessment Report highlighted the importance of collective action in facing shared challenges.[49] This spirit of collaboration enables knowledge exchange, capacity-building, and a unified approach to climate action.

Looking ahead, the Arab world must adopt forward-looking strategies to meet its international climate commitments and address air pollution. Expanding renewable energy adoption is paramount to achieving climate goals. Countries like Saudi Arabia and the UAE have the potential for significant solar energy production and should continue to invest in clean energy projects.[50]

Technological innovation can play a transformative role in reducing emissions and mitigating air pollution. Countries should invest in research and development of green technologies, such as carbon capture and storage, to transition to a low-carbon future.

Additionally, fostering public engagement and awareness is essential in the future fight against climate change. Arab countries should educate citizens on the importance of

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[46] International Renewable Energy Agency (IRENA). (2020). Renewable Energy Market Analysis: The GCC Region 2020. IRENA.
[47] UNESCWA. (2018). Arab Climate Resilience Initiative: A Regional Consultation. United Nations Economic and Social Commission for Western Asia.
[48] International Energy Agency (IEA). (2020). Energy Policies of IEA Countries: United Arab Emirates 2020 Review. IEA.
[49] Arab League. (2021). Arab Climate Change Assessment Report. Arab League.
[50] Ibid

sustainable practices and empower them to participate in decision-making processes related to climate policies.[51]

The history of addressing international climate commitments and air pollution in the Arab world reflects a growing commitment to sustainable development. Past successes in renewable energy adoption and regional collaboration set the stage for present and future initiatives. Arab countries' ongoing efforts in diversifying energy sources, embracing green technologies, and fostering regional cooperation demonstrate a commitment to climate action.

Looking forward, the Arab League must continue on this trajectory, investing in renewable energy, promoting technological innovation, and engaging the public in the climate transition. By building on past achievements and adopting forward-thinking strategies, the Arab world can pave the way for a sustainable and resilient future, contributing to global efforts in combating climate change and preserving the region's environment for generations to come.

II. *Questions to Consider in Your Research:*

- What are the key drivers and factors influencing member states' international climate commitments in the Arab region, and how do they differ among countries with varying economic and development profiles?
- How do Arab countries' Nationally Determined Contributions (NDCs) align with the global goal of limiting global warming to well below 2°C or 1.5°C, and what are the gaps and challenges in achieving these targets?
- What are the main sources and contributors to air pollution in urban centers of the Arab region, and how do local environmental and economic factors influence emission patterns?
- How effective have past and current air quality management policies and regulations been in reducing air pollution levels in Arab countries, and what are the barriers to their successful implementation?
- What role does regional collaboration and knowledge-sharing play in promoting climate resilience and air pollution mitigation efforts among Arab League member states?
- How do socio-economic factors, such as energy demand, population growth, and industrial activities, impact air pollution and climate change vulnerability in the Arab world?

III. *Questions a Resolution Might Answer:*

[51] UNEP. (2019). Global Environment Outlook - GEO-6: Healthy Planet, Healthy People. United Nations Environment Programme.

- How will the resolution assess the current state of member states' international climate commitments, including their Nationally Determined Contributions (NDCs) under the Paris Agreement?
- What mechanisms will be established to ensure transparency, accountability, and regular updates on progress toward meeting climate targets and goals?
- How will the resolution promote the development and implementation of effective air quality management policies and regulations in Arab countries?
- What measures will be taken to identify and address the main sources of air pollution in urban centers and industrial areas?
- How will the resolution foster regional collaboration and knowledge-sharing among Arab League member states to enhance climate resilience and air pollution mitigation efforts?
- What platforms or mechanisms will be established to facilitate the exchange of best practices and successful case studies from within the Arab region and other parts of the world?
- What financial resources will be mobilized to support the implementation of climate and air pollution mitigation initiatives in the Arab region?
- How will the resolution promote access to climate funds and international support for vulnerable Arab countries in their climate adaptation and mitigation efforts?