



Gulf Research Center
Knowledge for All

GCC-Iran Environmental Relations: Challenges and Opportunities



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Image source: <https://en.irna.ir/news/84819411/Iran-UAE-sign-environmental-document>

GCC-Iran Environmental Relations: Challenges and Opportunities

1. Introduction

1.1 Overview

Iran and the Gulf States should overcome historical tensions to address pressing environmental issues that extend beyond their countries' borders

Iran and Gulf Cooperation Council (GCC) states face several shared environmental challenges. These include primarily 1) climate change 2) water scarcity 3) dust storms 4) biodiversity loss 5) air pollution and 6) nuclear pollution. These transboundary issues are extremely complex, making them virtually impossible to solve with the effort of just a single country. However, these environmental issues are pressing matters that affect the health and economies of the GCC states these countries, as well as neighboring Iran, and present an interesting leverage point for cooperation, possibly alleviating tensions.

At the outset, it is important to note that the GCC was formed in part as a response to the revolution in Iran. GCC member states share common interests and work together to address regional and international developments that could impact them. Collaboration on environmental issues is especially critical, as these problems are transboundary. However, the establishment of the GCC highlights the GCC member states apprehension toward Iran, which in turn poses a challenge to cooperation.¹

There are many reasons for tensions between GCC

¹ Al Hassan, Omar, "The GCC's Formation: The Official Version." Al Jazeera Centre for Studies, March 2015, <https://studies.aljazeera.net/en/dossiers/2015/03/201533011258831763.html> (accessed March 23, 2023).

member states and Iran. This includes longstanding territorial disputes, ideological differences, and a consistent rivalry about influence in the wider Middle East. The region has experienced three major conflicts since 1980, including the Iran-Iraq War, the U.S.-led coalition to roll back Iraq's invasion of Kuwait, and the 2003 U.S.-led war to remove Saddam Hussein from power.² One of the biggest issues in Iran-UAE relations is their competing claims over the islands of Abu Musa, Greater Tunb, and Lesser Tunb. Many Gulf states are concerned about Iran's nuclear program, as they worry it could upset the balance of power in the region. Furthermore, Iran and some Gulf states have competing interests in the region and have attempted to exert their influence in neighboring countries.³ These conflicts have already impacted environmentalists. In Iran in 2018, 9 conservationists were jailed after being accused of espionage. Other environmentalists across the Middle East are being pressured into silence. States see environmentalists as threats because the data they hold could greatly influence public opinion on state-run businesses such as coal-fired power plants.⁴

Nonetheless, the shared risk of environmental and climate-related problems could serve as

² United States Institute of Peace, "Iran and the Gulf States," The Iran Primer, June 2017, <https://iranprimer.usip.org/resource/iran-and-gulf-states> (accessed March 23, 2023).

³ Kamrava, Mehran, "Iran and the Gulf Cooperation Council." Middle East Institute, January 29, 2009, <https://www.mei.edu/publications/iran-and-gulf-cooperation-council> (accessed March 23, 2023).

⁴ Hoffman, A. "The Middle East's Environmental Movement Has a Spy Problem." The Atlantic, March 17, 2019. <https://www.theatlantic.com/international/archive/2019/03/middle-east-north-africa-environmentalism-espionage/585973/>.



an opportunity for GCC countries to alleviate historical tensions with Iran. Historically, opportunism has been “Iran’s principal avenue for relationships in the region.”⁵ Therefore, it is crucial to highlight the benefits of cooperation against climate change and other environmental issues to invite and motivate these countries to cooperate.

If pursued in a constructive manner, the political and economic benefits could be profound. Decreasing political tensions could lead to forms of dispute settlement and encourage stability in the region. This would allow countries to better cooperate in tackling regional and international issues. Having a united front as a region can increase bargaining power in international situations. With COP 28 set to take place in the United Arab Emirates, there are already movements to minimize regional tensions.⁶ Additionally, economic ventures allow countries to utilize resources that may not be available otherwise. This stability would stimulate trade and investment. In the case of Iran and Qatar, Iran’s air space and sea corridors boosted trade during the time Qatar was under a blockade from fellow GCC members.⁷ Cooperation would further be instrumental in the energy transition that these countries aim to achieve, which, in turn, could boost economic diversification, bring environmental co-benefits, enhance national

energy security, and mitigate economic losses associated with climate change.⁸

2. Environmental Issues GCC Countries and Iran Face

GCC countries face a myriad of transboundary environmental issues that adversely affect one another. The below figure illustrates the way environmental issues are interconnectivity and how one climatic problem can lead to many disastrous effects on the environment.

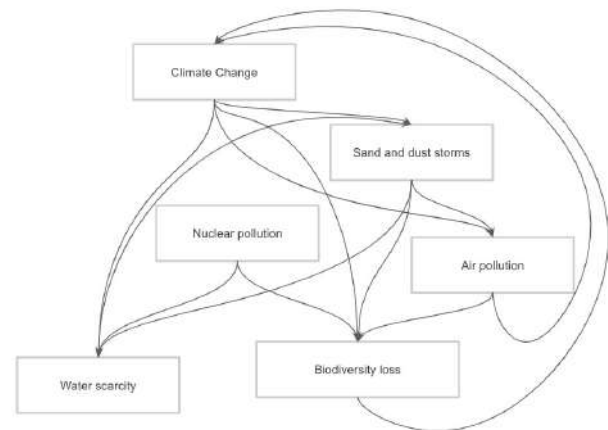


Figure 1: Environmental Issues Facing the GCC Countries and Iran

1.1 Climate Change

As climate change causes long-term alterations to weather patterns and the temperature, one likely impact is the increase in sea levels and the coastal areas of all Arabian Gulf states are highly vulnerable. This includes numerous large and

5 Vakil, Sanam. “Iran’s Relations with the Gulf Arab States: An Overview” Chatham House, September 3, 2018. <https://www.chathamhouse.org/sites/default/files/publications/research/2018-09-13-iran-gcc-vakil.pdf>.

6 Arab Center, Washington D.C. “The GCC Is on Board with the Saudi-Iran Agreement” January 20, 2021. <https://arabcenterdc.org/resource/the-gcc-is-on-board-with-the-saudi-iran-agreement/>.

7 Al Jazeera, “What will reduce tensions within the GCC mean for Iran?” January 7, 2021. <https://www.aljazeera.com/news/2021/1/7/what-will-reduced-tensions-within-the-gcc-mean-for-iran>.

8 Al-Sarihi, Aisha, and Noura Mansouri. “Renewable Energy Development in the Gulf Cooperation Council Countries: Status, Barriers, and Policy Options.” *Energies* 15, no. 5 (2022) 1923. <https://doi.org/10.3390/en15051923>.

small islands in the Gulf region, such as Bahrain’s islands, which are particularly susceptible due to their low-lying geology and extensive coastal activity. Climate change-induced sea level rise could cause significant land inundation in coastal regions such as Bahrain. Figure 2 illustrates how the Red Sea and the Gulf of Aden have shown high variations relative to the mean just 1 decade ago. Inundation from rising sea levels would adversely affect vulnerable infrastructure, including cities, roads, agricultural areas, beaches, and salt marshes. Similar damage and alterations would also occur in other cities along the coast, such as Kuwait and Dubai if the necessary reinforcement measures are not implemented.⁹ In addition to damaging the infrastructure, rising sea levels increase stress on the coastal ecosystems.¹⁰

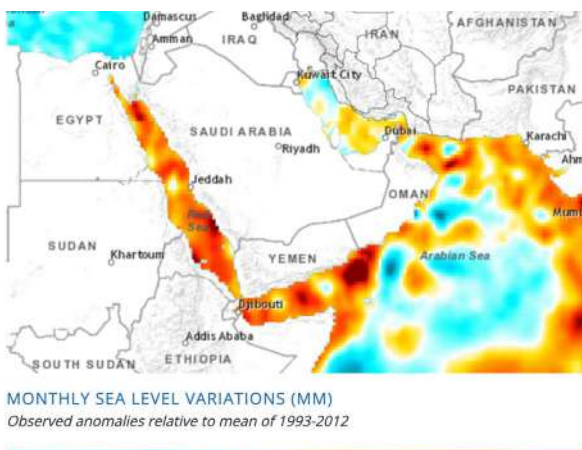


Figure 2: Historical Sea Level Anomaly (1993-Jan) (Source: WTO Climate Change Knowledge Portal)¹¹

1.2 Water Scarcity

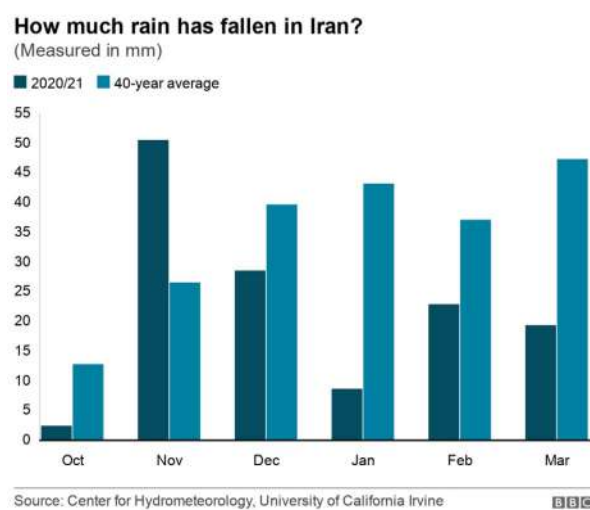
The World Resources Institute places Iran and all 6 of the GCC countries among the 17 countries

⁹ Al-Olaimy, Tariq. “Climate Change Impacts in the GCC.” EcoMENA, May 25, 2021. <https://www.ecomena.org/climate-change-impacts-gcc/> (accessed February 20, 2023).

¹⁰ World Bank Climate Change Knowledge Portal. “Impacts of Sea Level Rise in Iran - Islamic Republic.” <https://climateknowledgeportal.worldbank.org/country/iran-islamic-rep/impacts-sea-level-rise> (accessed March 31, 2023).

¹¹ *Ibid.*

experiencing extremely high water stress.¹² This is due to several reasons including drought, use of non-renewable sources of energy, poor water management, and unsustainable agriculture. Graph 1 illustrates the decrease in waterfall in comparison to a 40-year average. Satellite imagery in the region shows the water levels of major freshwater sources such as the Karun River and Lake Urmia to be falling significantly.¹³



Graph 1: Waterfall in Iran (Source Center for Hydrometeorology, UCI)¹⁴

Similarly, Bahrain’s urbanization has accelerated the groundwater depletion that has resulted in the disappearance of the country’s once-distinctive freshwater springs and lush plains.¹⁵

While climate change is undoubtedly a contributor to the lack of water, experts point out that it is the mismanagement of water that is the biggest cause. The ongoing use of non-renewable water sources, especially for agricultural purposes, contributes

¹² Rutger Willem Hofste, Paul Reig, Leah Schleifer, “17 Countries, Home to One-Quarter of the World’s Population, Face Extremely High Water Stress,” World Resources Institute, August 6, 2019, <https://www.wri.org/insights/17-countries-home-one-quarter-worlds-population-face-extremely-high-water-stress>.

¹³ Jack Goodman “Iran water: What’s causing the shortages?” op. cit.

¹⁴ *Ibid.*

¹⁵ Al-Olaimy, Tariq. “Climate Change Impacts in the GCC.” EcoMENA, op. cit.



significantly to the loss of groundwater reserves in GCC countries, putting these nations at grave risk of climatic impacts. Deep fossil aquifers, desalinated water, surface water, and recovered wastewater are the four sources of water used in Saudi Arabia. Since these resources are non-renewable and have been badly depleted as a result of policies that have subsidized both agricultural products like wheat and tools to generate them, collecting water from deep aquifers is comparable to mining. Saudi Arabia uses 85% of the country’s freshwater sources for agriculture.¹⁶ This is comparable to neighboring countries: Iran allocates 90% to agriculture¹⁷ and Oman 83%.¹⁸ Not only is water being misused, but it is also being contaminated. Groundwater contamination has been linked to industrial and agricultural processes, oil and gas exploration, incorrect waste management, and salination. Waters contain nitrates, hydrocarbons, and heavy metals that are harmful to the environment and people.¹⁹

While the great majority of desalination plants in the region are energy-intensive and have come at a significant cost to the environment, excessive reliance on these plants has increased electricity consumption, as seen in countries such as Qatar and Iran.²⁰ Energy is a sensitive issue related to water, as the decrease in water impacts

hydropower generation capacity.²¹

1.3 Sand and Dust Storms

Sand and dust storms have increased in intensity in the Middle East and the Gulf region. While precise causes have not been fully uncovered, experts assume that their increased frequency and scale are due to water mismanagement, deforestation, desertification, drought, the construction of dams, and warfare. It has affected trade, travel, and the health and livelihoods of those living in the dust belt. Additionally, sand and dust clogs waterways, pollutes the air, and covers solar panels, leading to other environmental issues.²²



Dust Storm in Tehran on April 8, 2022 (Source: Mehr Nes Agency)²³

This phenomenon has also intensified political friction, as Iran’s Department of Environment has made claims that Saudi Arabia is the “main origin” of sand and dust storms, pointing to them as a

16 US-Saudi Arabian Business Council. “Water in Saudi Arabia: Desalination, Wastewater, and Privatization.” <https://ussaudi.org/water-in-saudi-arabia-desalination-wastewater-and-privatization/> (accessed March 31, 2023).

17 Goodarz Danaei et al. “The Lancet Countdown on Health Benefits from the Paris Agreement: A Systematic Analysis for the Global Burden of Disease Study 2017.” *The Lancet*, accepted manuscript (2019). [https://doi.org/10.1016/S0140-6736\(18\)33197-0](https://doi.org/10.1016/S0140-6736(18)33197-0).

18 Fanack Water. “Water Use in Oman.” May 7, 2018. <https://water.fanack.com/oman/water-use-oman/>.

19 Siddiqi, Sajjad Ahmad, Abdullah Al-Mamun, Mahad Said Baawain, and Ahmad Sana. “Groundwater Contamination in the Gulf Cooperation Council (GCC) Countries: A Review.” *Environmental Science and Pollution Research* 28, no. 18 (2021): 21023-21044, doi: 10.1007/s11356-021-12981-7.

20 Al-Olaimy, “op. cit.

21 Goodman, op. cit.

22 Cafiero, Giorgio. “‘Vicious cycle’: Storms intensify in the Gulf as climate changes.” *Al Jazeera*, June 2, 2022. <https://www.aljazeera.com/news/2022/6/2/a-vicious-cycle-intensifying-storms-in-gulf-as-climate-changes>; Keynoush, Banafsheh. “Severe Sand and Dust Storms Are an Underrated Risk in the Gulf Region Despite Mitigation.” *Middle East Institute*. March 14, 2022. <https://www.mei.edu/publications/severe-sand-and-dust-storms-are-underrated-risk-gulf-region-despite-mitigation>.

23 Mehr News Agency. “Tehran witnesses severe air pollution from dust storm.” March 30, 2023. <https://en.mehrnews.com/news/185458/Tehran-witnesses-severe-air-pollution-from-dust-storm>.

consequence of excessive groundwater extraction and land-use changes.²⁴ The World Bank however, found occurrences of anthropogenic dust storms originating in both Saudi Arabia and Iran’s salty lakes and deserts.²⁵ In addition, these storms often originate from countries with little vegetation, where there are few obstacles to strong winds. For example, Kuwait, with limited vegetation, is hit by sand and dust storms for at least three months out of the year, roughly 25% of the year. This is comparatively high, considering Bahrain is affected 5.6% of the year, Qatar 7.1%, and the UAE 3.9%. In Kuwait, winds carrying sand and dust can reach speeds of 93-109 km per hour, leading to near-zero visibility.²⁶

1.4 Biodiversity Loss

As a result of the hyper-arid environment in the area serving as a breeding ground for rare species, biodiversity is a significant issue in the Gulf region. There are several mammal, bird, amphibian, and reptile species in the area’s terrestrial habitat. 18% of UAE’s reptiles and amphibians have been found to be either vulnerable or near extinction.²⁷

The biodiversity of the regional aquatic environment have been historically abundant, with its many productive coastal habitats, including coral reefs, mangroves, algal beds, seagrass beds, and intertidal mudflats. Fish and marine animals, some of which are endangered, are badly impacted

by increasing sea temperatures, water salinity, ocean acidification and other types of habitat degradation.²⁸ The yellowfin tuna population for example, is suspected to fall anywhere between 28 and 65%. Qatar hosts at least 26 endangered marine species on the brink of extinction.²⁹

1.5 Air Pollution

In the Gulf, the average carbon emissions are 23 tons per person, in comparison to 7 tons in Europe.³⁰ This contributes to energy, transport, and health issues, reducing productivity and causing illness, and death. Bahrain’s air quality has depreciated, falling below recommended air quality levels by 7 times, mostly as a result of the transportation and industry sectors. Even worse, Qatar has the highest GHG emission rates per capita, and the air quality is 9 times lower than levels considered safe.³¹ Bahrain, Kuwait, and Qatar, with the WTO, are working on the Gulf Environmental Partnership and Action Program to share knowledge on the issue.³²

Iran, too, has a dire air pollution problem that the UN has recently referred to as “catastrophe.” Pollution, caused by refineries, power plants, factories, and vehicles is causing severe illnesses and has been the cause, either directly or indirectly, of about 40,000 deaths nationwide. In the past couple of years, the burning of mazut increased, leading to an increase in fine particulate matter (PM2.5) by more than 87% in 2022, in

24 Tehran Times. “Saudi Arabia is “main origin” of sand and dust storms: Iran DOE chief.” June 8, 2022. <https://www.tehrantimes.com/news/473429/Saudi-Arabia-is-main-origin-of-sand-and-dust-storms-Iran-DOE>.

25 World Bank, Sand and Dust Storms in the Middle East and North Africa

Region—Sources, Costs, and Solutions. Washington, DC, 2019.

26 Keynoush, Banafsheh. “Severe Sand and Dust Storms Are an Underrated Risk in the Gulf Region Despite Mitigation,.” *op. cit.*

27 Sophie Smith. “Confronting the Environmental Challenges in the GCC.” European Gulf Information Centre. 2023. <https://www.egic.info/confront-environmental-challenges-gcc> (accessed March 31, 2023).

28 Al-Olaimy. *op. cit.*

29 Sophie Smith. “Confronting the Environmental Challenges in the GCC.” *op. cit.*

30 Ibid.

31 Ibid.

32 Helena Naber. “Air Pollution: Evidence from the Gulf Environmental Partnership and Action Program.” GCC Knowledge Series, World Bank, Washington, D.C. 2016. <https://openknowledge.worldbank.org/handle/10986/24003>



comparison to 2021.³³ The inhalation of PM 2.5 can cause detrimental health issues such as asthma, heart attacks, bronchitis, lung infection, and even death.

1.7 Nuclear Pollution

In the region, the UAE is the only GCC country with a nuclear power plant while Iran is constructing two NPPs in Bushehr.³⁴ The International Atomic Energy Agency (IAEA) reports that the UAE's Barakah Nuclear Power Plant (NPP) improved operational safety in September 2022, based on the findings of an IAEA safety review made in 2017.³⁵ However, there are risks beyond operational safety. First, experts point out that such a large source of power in such a volatile region could pose a major risk, especially considering that there have been 13 aerial strikes against nuclear reactors in the broader Middle East, since the early 80s. The Barakah NPP lacks extra defense against missile attacks or airplane crashes, even after the facility underwent improvements. If the Barakah NPP provides 25% of UAE's electricity as it aims to with the completion of the 4th reactor, it could be a critical target, much like Saudi Arabia's oil facilities were assaulted in September 2019 and temporarily suspended more than half of the country's oil production. In addition, the Barakah NPP has lacked transparency in the disclosure of its problems. For example, cracks in the containment building were only made public one year after their detection, even though they posed a major health hazard potentially leaking radioactive materials into the environment.

The governor-general of Bushehr, Ahmad Mohammadzadeh, emphasized that the two Bushehr NPPs are being constructed domestically. He states that unlike prior to the Islamic Revolution in 1979, when NPPs were entrusted to foreign companies, Iran now possesses the expertise to design and construct power plants.³⁶ However, the Bushehr NPP has experienced temporary emergency shutdowns and trouble with completing repairs due to difficulties in procuring equipment from Russia. At the same time, there are ongoing concerns that since Iran is geographically located along several fault lines, the frequency of earthquakes poses added dangers to the existence of multiple NPPs.³⁷ Whether caused by attacks, natural disaster, or structural issues, any radiological release affects the region's environment and health of everyone in proximity. Nuclear power plants have much more power than nuclear weapons, and problems at NPPs have the potential to devastate the unique biodiversity in the Gulf. If the Gulf is contaminated, it would also affect the water supply in the Gulf regions, as countries make fresh water out of the Gulf through desalination technology. Therefore, to address current concerns of leaks and future potential disasters (including those from future nuclear power in other countries), experts suggest developing a liability structure.³⁸

33 Asharq Al-Awsat. "Toxic Smog: Iran Criticized for Winter 'Air Pollution Catastrophe'." February 27, 2023. <https://english.aawsat.com/home/article/4182071/toxic-smog-iran-criticized-winter-%E2%80%98air-pollution-catastrophe%E2%80%99> (accessed 4 April 2023).

34 Islamic Republic News Agency. "Iran starts building two new nuclear power plants in Bushehr." Islamic Republic News Agency. June 8, 2023. <https://en.irna.ir/news/85134304/Iran-starts-building-two-new-nuclear-power-plants-in-Bushehr>

35 IAEA. "IAEA Sees Strengthened Operational Safety at UAE's First Nuclear Power Plant, Encourages Continued Improvement." 2022. <https://www.ecomena.org/climate-change-impacts-gcc/> (accessed February 22, 2023).

36 Islamic Republic News Agency. "Iran starts building two new nuclear power plants in Bushehr." Islamic Republic News Agency. June 8, 2023. <https://en.irna.ir/news/85134304/Iran-starts-building-two-new-nuclear-power-plants-in-Bushehr>

37 The Asahi Shinbun Associated Press. "Iran's sole nuclear power plant undergoes emergency shutdown." The Asahi Shinbun. June 21, 2021. <https://www.asahi.com/ajw/articles/14377542>

38 Patricia Sabga. "Nuclear Gulf: Experts sound the alarm over UAE nuclear reactors." Al Jazeera. July 15, 2020. <https://www.aljazeera.com/economy/2020/7/15/nuclear-gulf-experts-sound-the-alarm-over-uae-nuclear-reactors>.

3. Current Solutions

3.1 Iran-GCC Relations

The health of the ecosystem in the Gulf needs to become a unifying issue for the Gulf countries. The Regional Organization for the Protection of the Marine Environment (ROPME) highlights the majority of environmental cooperation between GCC and Iran. Under the Kuwait Action plan, Iran, Iraq, and participating GCC member states established ROPME in 1978 to regulate marine pollution.³⁹ The agreement includes management activities such as surveying and assessing Gulf waters. Additionally, it provides protocols for pollution by oil, exploration, land-based sources, and hazardous waste, although these have not been updated since the 2000s. ROPME takes an integrated ecosystem approach, resulting in joint activities such as the ROPME Marine Emergency Mutual Aid Center with international organizations and international non-governmental organizations in response to oil spills in Bahrain.⁴⁰

The establishment of ROPME can be considered quite a success, as the member states do not share a lengthy history of cooperation. That said, ROPME has been unable to deliver on all of its commitments due to a lack of funding, compliance, exchange of information, and political conflicts.⁴¹ Additionally, for fear of resurfacing tensions, there are limitations to its ability to update protocols and improve practices. According to a study funded jointly by ROPME



and the UK-Gulf Marine Environment Partnership Programme of the UK Foreign, Commonwealth, and Development Office, there are four evidence gaps that ROPME should aim to address. These are 1) the absence of smaller regional projections showing the change in temperature, salinity, and storminess 2) comprehension of ecological boundaries and responses to environmental change for important species, habitats, and communities 3) comprehension of the combined effects of human pressure and climate change and 4) comprehension of how climate change could affect the ROPME Sea Area's environmental products and services.⁴² The lack of protocols on biodiversity and conservation⁴³ shows unalignment with global trends.

3.2 Bilateral Relations within the Arabian/Persian Peninsula

Regional relations benefit from strong bilateral ties, as anticipated through a series of MoUs between Iran and Qatar's.⁴⁴ Iran and Qatar signed

39 Taheran, Shervin. "What Could Environmental Cooperation Between Iran and the GCC Look Like?" Middle East Institute. October 21, 2021. <https://www.mei.edu/publications/what-could-environmental-cooperation-between-iran-and-gcc-look>.

40 Palgrave Macmillan. "Regional Environmental Cooperation: The (Lost) Potential for a Sustainable Future in the Arabian/Persian Gulf." In *The Palgrave Handbook of Positive Peace*. 2021. https://doi:10.1007/978-981-15-3877-3_44-1.

41 Taheran, Shervin. "What Could Environmental Cooperation Between Iran and GCC Look Like?" op. cit.

42 Lincoln, Susana, Paul Buckley, Ella L. Howes, Katherine M. Maltby, John K. Pinnegar, Thamer S. Ali, Yousef Alosairi, et al. "A Regional Review of Marine and Coastal Impacts of Climate Change on the ROPME Sea Area." *Sustainability* 13, no. 24. December 14, 2021. <https://doi.org/10.3390/su132413810>.

43 Palgrave Macmillan. "Regional Environmental Cooperation: The (Lost) Potential for a Sustainable Future in the Arabian/Persian Gulf." op. cit.

44 Fatemeh Salari. "Iran and Qatar sign 14 official cooperation documents." Doha News, February 22, 2022. <https://dohanews.co/iran-and-qatar-sign-14-official-cooperation-documents/>.



14 memorandums in 2022 in fields including transportation, transit, trade, and agriculture,⁴⁵ all having the potential to contribute to the mitigation of environmental issues. Other regions do not share the same level of cordiality with Iran, although there seem to be improvements in recent years. In September 2022, Kuwait sent an ambassador to Tehran for the first time in six years,⁴⁶ even though the two regions share a history of cooperation for water and energy resources.⁴⁷ The recent rapprochement between Saudi Arabia and Iran also points to a brighter future between Iran and GCC member states.

The UAE has also shown motivation to normalize relations with Iran.⁴⁸ In 2022, Tehran and Abu Dhabi signed a MoU to enhance collaboration in addressing dust storms. The MoU aims to address issues related to dust storms, exchange of expertise and experiences, and utilize international centers for forecasting sand and dust storms.⁴⁹

With improved bilateral and multilateral relations, there is potential for better cooperation between the Gulf countries and Iran in tackling environmental issues. This commitment to collaboration was evident during the signing ceremony of the MoU, where Iran reaffirmed its dedication to addressing environmental challenges alongside its neighboring countries, without relying on

foreign assistance.⁵⁰ A notable instance of this cooperative spirit was seen during a conference held in Tehran in July 2022, where the Chief of the Iranian Department of Environment, Ali Salajeqheh, expressed concerns about pollution affecting joint waterways and highlighted the potential role of ROPME as a solution. The shared commitment among regional nations underscores the significance of working together to find local solutions for environmental problems.⁵¹

3.3 Participation in International/Multilateral Environmental Conventions and Agreements

While regional cooperation has been stagnant over the years, GCC countries and Iran have been showing stable participation in international agreements as shown in Table 1. However, Iran has been falling short in the participation of regional and international agreements. For example, Iran did not participate in the 2021 Regional Climate Dialogue.⁵² Additionally, Iran showed its disagreement against the UN convention stating that a healthy environment is a human right.⁵³

45 Tehran Times. "Iran, Qatar ink MOU to conclude 8th Joint Economic Committee." October 27, 2021. <https://www.tehrantimes.com/news/473361/Iran-Qatar-ink-MOU-to-conclude-8th-Joint-Economic-Committee>.

46 Amwaj Media. "Inside Story: Iran-GCC Rapprochement Advances, But at Uneven Pace." Amwaj Media. March 25, 2021. <https://amwaj.media/article/inside-story-iran-gcc-rapprochement-advances-but-at-uneven-pace>.

47 Cafiero, Giorgio and Cinzia Miotto. "Kuwaiti-Iranian Relations: The Energy Angle," Atlantic Council, September 29, 2016, <https://www.atlanticcouncil.org/blogs/menasource/kuwaiti-iranian-relations-the-energy-angle/> (accessed April 3, 2023).

48 Ibid.

49 Fars News Agency. "Iran, UAE to Sign MoU to Tackle Dust Storms." July 11, 2022. <https://www.farsnews.ir/en/news/14010420000636/Iran-UAE-Sign-MU-Tackle-Ds-Srms>

50 Islamic Republic News Agency. "Iran, UAE sign environmental document." July 12, 2022. <https://en.irna.ir/news/84819411/Iran-UAE-sign-environmental-document> (accessed July 24, 2023).

51 Tehran Times. "Iran, UAE underscore environmental cooperation in [the] region." January 9, 2023. <https://www.tehrantimes.com/news/480635/Iran-UAE-underscore-environmental-cooperation-in-region> (accessed July 24, 2023).

52 Alex Vatanka. "Iran's Biggest Problem Is Water," Foreign Policy, May 24, 2021, <https://foreignpolicy.com/2021/05/24/irans-biggest-problem-is-water/>.

53 Asharq Al-Awsat, "Toxic Smog: Iran Criticized for Winter 'Air Pollution Catastrophe.'" February 27, 2023. <https://english.aawsat.com/home/article/4182071/toxic-smog-iran-criticized-winter-%E2%80%99air-pollution-catastrophe%E2%80%99> (accessed 4 April 2023).

Table 1: Participation in International Environmental Agreements (Source: United Nations Information Portal on Multilateral Environment Agreements (informea.org); EXOLEX (ecolex.org)⁵⁴

International regime by topic (dates of adoption, entering force)	GCC Countries						
	Iran	Bahrain	Kuwait	Oman	Qatar	Saudi Arabia	UAE
Climate Change							
Basel Protocol on Liability and Compensation (1999)						A(13)	
United Nations Framework Convention on Climate Change (1992, 1994)	R(96)	R(94)	A(94)	R(95)	A(96)	A(94)	A(95)
Kyoto Protocol (1997, 2005)	A(05)	A(06)	A(07)	A(05)	A(05)	A(05)	A(05)
The Montreal Protocol on Substances that Deplete the Ozone Layer (1987, 1989)	A(90)	A(90)	A(92)	A(99)	A(96)	A(93)	A(89)
The Vienna Convention for the Protection of the Ozone Layer (1985,1988)	A(90)	A(90)	A(92)	A(99)	A(96)	A(93)	A(90)
Paris Agreement (2015, 2016)	S(16)	R(16)	R(18)	R(19)	R(17)	R(16)	Ac(16)
Biodiversity							
Convention on International Trade in Endangered Species of Wild Fauna and Flora (1973, 1975)	R(76)	A(12)	R(02)	A(08)	A(01)	A(96)	A(90)
The Convention on the Conservation of Migratory Species of Wild Animals (1979, 1983)	P(08)					P(91)	P(16)
The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity (2010, 2014)			A(17)		A(17)		A (14)
Convention on Biological Diversity (CBD) (1992, 1993)	R(96)	R(96)	R(02)	R(95)	R(96)	A(01)	R(00)
Nagoya – Kuala Lumpur Supplementary Protocol (additional liability rules) (2010, 2018)							A(18)
Ramsar Convention: The Convention on Wetlands of International Importance (1971, 1975)	R(75)	A(98)	A(15)	A(13)			A(07)
Marine Pollution							
London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Materials (1972, 1975)	A(97)		S(73)	A(84)			A(75)
International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (FUND92) (1992, 2006) (latest amendment from original FUND of 1969)	A(07)	A(97)		R(95)	A(02)		A(01)
Civil Liability Convention for Oil Pollution Damage (1992, 1996) (latest amendment from original in 1969)	A(07)	A(97)	Ac(95)	A(94)	A(01)	A(02)	A(97)
International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties (INTERVENTION) (1969,1975)	A(97)		A(81)	A(85)	A(88)		A(83)

54 Palgrave Macmillan. op. cit.



International Convention on Oil Pollution Preparedness Response and Cooperation (1990, 1995)	A(98)	A(16)		A(08)	A(07)	A(04)	
World Heritage Convention (1972)	R(91)	R(02)	Ac(81)	Ac(81)	Ac(84)	Ac(78)	A(01)
Convention for the Prevention of Pollution from Ships (MARPOL 73/78) (1973, 1983) (amending the original convention in 1973)	A(02)	A(07)	A(07)	A(84)	A(06)	A(05)	A(07)
UN Convention on the Law of the Sea (UNCLOS) (1982, 1994)	S(82)	R(85)	R(85)	R(89)	R(02)	R(96)	S(82)
Others							
UN Convention on the Law of the Non-Navigational Uses of International Watercourses (1997, 2014)					A(02)		
United Nations Convention to Combat Desertification (1994, 1996)	R(98)	A(97)	R(97)	A(96)	A(99)	A(97)	A(98)

Note: Acronyms are as follows: R: Ratification, A: Accession, S: Signature (less than formal ratification or accession), Ac: (less than formal ratification or accession)

Table 2: Current Solutions Practiced by GCC and Iran

Solution	Scope	Opportunity	Challenge
Regional Organisation for the Protection of the Marine Environment	Marine Environment	History of cooperation through political friction	Lack of development in recent years

4. Potential Solutions

This section proposes specific solutions that GCC countries and Iran can implement to mitigate and adapt to their environmental issues.

4.1 Energy Transition

One of the most important climate change mitigation initiatives taken by countries in the region (and globally) is the energy transition. Many countries in the Gulf rely on fossil fuels as not only a means of energy for domestic consumption but also for trade. Resource sharing and capacity building are rather simple steps Iran and GCC countries take. Various institutions, such as the International Renewable Energy Agency (IRENA), Qatar Environment and Energy Research Institute (QEERI), King Abdullah Petroleum Studies and Research Center (KAPSARC) in Saudi Arabia, and similar organizations in the UAE and Oman, engage in joint research programs with global institutions. For example, the Energy Efficiency Organization of Iran (SATBA) invited IRENA to a workshop on solar energy in 2017.⁵⁵ As renewables and CCS are technologies that all countries in the region take great interest in, joint research on these can be beneficial for both countries. Moreover, exploring the possibility of Iran’s membership in the Middle East Desalination Research Center (MEDRC) in Oman could further enhance cooperation in addressing shared environmental challenges.

⁵⁵ International Renewable Energy Agency. “Project Navigator Workshop on the Development of Bankable Solar PV Projects in Iran.” IRENA, 2017. <https://www.irena.org/Events/2017/Oct/Project-Navigator-Workshop-on-the-Development-of-Bankable-Solar-PV-Projects-in-Iran>.

Another venture that could be considered is a joint power grid. The GCC countries agreed on the establishment of the GCC Interconnection Authority (GCCIA) in 2001, after assessing the benefits in terms of power security and the economy.⁵⁶ This has been implemented since 2012, and in July 2022,⁵⁷ GCCIA signed a contract with Iraq for interconnected grids.⁵⁸ Iran, sharing a border with Iraq, could be the next country to benefit from such interconnectivity. According to the Renewable Energy Institute, the advantages of an international grid connection are a “more stable energy supply, greater deployment of renewables, and more competitive energy prices.”⁵⁹ These are relevant advantages for these countries which require strong developments in the energy transition.

Carbon pricing initiatives, cap-and-trade or carbon tax can contribute to the decarbonization of the region. According to the Abdullah Bin Hamad Al-Attiyah International Foundation for Energy & Sustainable Development, there are more benefits to a carbon tax system for countries in the region, as there is a lower administrative cost and more transparency. Additionally, the carbon tax can be revenue-neutral and be designed to be progressive, so the tax does not disproportionately affect low-

income households or SMEs.⁶⁰ In the case that a carbon tax is implemented, the countries can cooperate on research and development and the sharing of best practices to ultimately harmonize carbon tax prices for a consistent and clear framework for businesses to more easily maneuver multiple jurisdictions.

4.2 Wildlife Conservation and Ecotourism

Ecotourism has been gaining traction and boosting its economic benefits can be leveraged to increase wildlife conservation. In the Arabian Peninsula, reforestation initiatives and water security contribute significantly to the development of ecotourism.⁶¹ Cooperation in the region can increase the competitiveness of tourism to the Arabian Peninsula in the global market and induce resource sharing to the area’s common ecological system.

Saudi Arabia and the UAE are already prominent ecotourism markets for their biodiversity projects and cultural history.⁶² In the UAE, there are 43 nature reserves, making up 14% of the area of the country.⁶³ Of these, more than 6% are protected areas. These can be toured with the cooperation of international and national environmental groups such as the Emirates Nature World Wildlife Fund

56 Gulf Cooperation Council Interconnection Authority. “GCCIA Mission” https://www.gccia.com.sa/P/gccia_mission/85.

57 Robert Tollast. “A power grid for the Middle East: What is the GCCIA and can it benefit Iraq?” The National News. July 16, 2022. <https://www.thenationalnews.com/mena/iraq/2022/07/16/a-power-grid-for-the-middle-east-what-is-the-gccia-and-can-it-benefit-iraq/> (accessed April 9, 2023).

58 Arab News. “GCCIA signs a contract to interconnect GCC grids with Iraq.” July 17, 2022. <https://www.arabnews.com/node/2123801/business-economy/> (accessed April 9, 2023).

59 Institute for Global Environmental Strategies. “Achieving Sustainable Energy Goals (ASG) 2020.” Renewable Energy Institute. <https://www.renewable-ei.org/en/activities/qa/ASG.php>.

60 Abdullah Bin Hamad Al-Attiyah International Foundation for Energy & Sustainable Development. “Carbon pricing: Lessons for the Middle East.” February 2020. https://www.abhafoundation.org/media-uploads/reports/Sustainability_02-February_02_2020-print.pdf

61 Future Market Insights. “GCC Ecotourism Market to Witness Decelerated Demand in Short Term with Suspension of International Travel - Future market Insights.” Accesswire. July 6, 2020. <https://www.accesswire.com/596352/GCC-Ecotourism-Market-to-Witness-Decelerated-Demand-in-Short-Term-with-Suspension-of-International-Travel--Future-market-Insights> (accessed April 7, 2023).

62 Ibid.

63 “Topography and Ecosystems.” UAE Government Portal. February 7, 2022. <https://u.ae/en/information-and-services/environment-and-energy/topography-and-ecosystems>.



and Emirates Environmental Group.⁶⁴

Iran is taking steps toward increasing ecotourism. It established a National Ecotourism Committee in 2005 and created the Iranian Ecotourism Scientific Association in 2016. However, studies show concerns that weak governance, infrastructural challenges, lack of community awareness toward ecotourism, and other environmental challenges hinder growth of the sector.⁶⁵

4.3 Water Management

Through economies of scale, GCC countries and Iran can cut costs on infrastructure and maintenance. They are depleting groundwater sources at a rapid rate, and the fragmentation of water authorities is contributing to the ineffective governance of water.⁶⁶ For example, in some regions such as Qatar and Abu Dhabi in the UAE, water is freely available, disincentivizing efficient water use.⁶⁷ Studies identify the shortcomings of management and monitoring of water and the lack of regulation around standardization and tariffs to be the largest contributor to water scarcity.⁶⁸

For freshwater sources on earth’s surface, bodies of water on borders should be regulated jointly.

64 UAE Government, (n.d.). “Ecotourism.” <https://u.ae/en/information-and-services/visiting-and-exploring-the-uae/what-to-do-in-the-uae/other-things-to-do-in-the-uae/ecotourism> (accessed January 25, 2023).

65 Makian, Sarasadat, and Farid Hanifezadeh. “Current challenges facing ecotourism development in Iran.” *Journal of Tourismology* 7, no. 1 (2021). 123-140, <https://doi.org/10.26650/jot.2021.7.1.0007>.

66 Zubari, Waleed Khalil. “Water Resource Management in GCC – Issues and Challenges.” *EcoMENA*, November 27, 2021. <https://www.ecomena.org/water-resource-management-gcc/>.

67 Krampera, Tomáš. “Water in the GCC.” *EGIC - European Gulf Information Centre*. February 17, 2021. <https://www.egic.info/water-in-the-gcc>.

68 Ghazinoory, Sepehr, Mohammad Khosravi, and Shohreh Nasri. “A Systems-Based Approach to Analyze Environmental Issues: Problem-Oriented Innovation System for Water Scarcity Problem in Iran.” *Journal of Economic and Development Studies* 30, no. 3 (2022.): 92-117. <https://doi.org/10.1177/10704965211019084>.

Shared bodies of water include the Gulf, Strait of Hormuz, and Gulf of Oman. Around 850 desalination plants were operating in the Gulf as of 2021, and the figure is growing. However, Iran lacks access to the latest desalination technologies. This adds to the existing issues in the Gulf such as overfishing, rising salinity, and rapid coastal development.⁶⁹



Figure 3 Map of GCC Countries and Iran (Source: World Atlas)⁷⁰

When water is jointly managed, regions can implement initiatives such as the regional water pricing mechanism to establish a uniform price and manage the demand for water with its efficient use. Pricing mechanisms were a key takeaway at the UN 2023 Water Conference,⁷¹ showing that there may be a common understanding of the merits of water pricing and that it is a lower-

69 Alex Vatanka. “Iran’s Biggest Problem Is Water.” op. cit.

70 World Atlas. “Gulf of Oman.” <https://www.worldatlas.com/gulfs/gulf-of-oman.html> (accessed May 4, 2023).

71 Global Taskforce. “Local and Regional Governments Call for Managing Water as a Common Good at UN Water Conference on Water Action, Global Taskforce.” March 19, 2018. <https://www.global-taskforce.org/local-and-regional-governments-call-managing-water-common-good-un-water-conference-water-action>.

hanging fruit. Furthermore, these regions can share technologies such as desalination to contribute to energy efficiency and mitigate pollution.

4.4 Sustainable Agriculture

The average GCC country uses 70 to 85% of its available water resources for agriculture,⁷² and Iran uses 90% for agriculture.⁷³ Despite these numbers, GCC countries and Iran are highly dependent on international food markets⁷⁸ Therefore, it is integral for GCC countries to find other sources of water and make agricultural practices more water efficient.

These countries can cooperate to use marginal water sources to produce useful crops. Marginal water sources include treated sewage effluent (TSE), saline groundwater, seawater, and produced water. As the potential of these water sources is not fully exploited,⁷⁴ it would serve the GCC and Iran well to analyze if these can be economically feasible and share results. The UAE is testing the new Seawater Energy and Agriculture System (SEAS) that uses arid land to its advantage. Seawater is pumped into shrimp and fish farms, and the wastewater is used to fertilize halophyte,

or salt-resistant, crops.⁷⁵

Other investments in agritech can serve these countries. Dubai opened the world's largest vertical indoor farm, EC01, in 2022. It requires 95% less water and its produce is grown without chemicals or pesticides. Moreover, the crops are not vulnerable to harsh weather conditions including increasing heat waves or sand and dust storms. While running these farms is energy-intensive,⁷⁶ the GCC and Iran have the potential to harness their renewable energy infrastructure for the operations of the farm. Other GCC countries as well as Iran could invest in similar facilities to alleviate the need for non-renewable water resources and at the same time mitigate risk from other environmental hazards.

4.5 Connected and Green Transportation Lines

Transportation is one of the highest emitters of air pollutants in the GCC, especially given its lack of clean, public transport. However, many countries aim to change that, with Saudi Arabia, the UAE, and Qatar improving transportation networks in recent years. Connected transportation lines are integral for these countries because they are important trade partners to one another. For example, the UAE is Iran's top source of imported goods.⁷⁷

Once the GCC railways are operational, they could expand to include Iraq and Iran. The GCC

72 Laura Parmigiani. "Water and Energy in the GCC: Securing Scarce Water in Oil-Rich Countries." French Institute of International Relations (2015): 9, Waleed K. Al-Zubari. "An Overview of the GCC Unified Water Strategy, 2016-2035." Water Sciences and Technology Association, 12th Gulf Water Conference (2017): 9, http://wstagcc.org/WSTA-12th-Gulf-Water-Conference/waleed_zubari.pdf.

73 Danaei, Goodarz, Farshad Farzadfar, Roya Kelishadi, Arash Rashidian, Omid M Rouhani, Shirin Ahmadnia, Alireza Ahmadvand, Mandana Arabi, Ali Ardalan, Mohammad Arhami, Mohammad Hossein Azizi, Moslem Bahadori, Jill Baumgartner, Arash Beheshtian, et al, 2019. "Iran in transition." The Lancet. [https://doi.org/10.1016/S0140-6736\(18\)33197-0](https://doi.org/10.1016/S0140-6736(18)33197-0).

74 J. Jed Brown, Probir Das, and Mohammad Al-Saidi. "Sustainable Agriculture in the Arabian/Persian Gulf Region Utilizing Marginal Water Resources: Making the Best of a Bad Situation." Sustainability 10, no. 5 (2018): 1364. <https://doi.org/10.3390/su10051364>.

75 World Future Energy Summit. "UAE Leading the Way in Sustainable Agriculture." <https://www.worldfutureenergysummit.com/en-gb/future-insights-blog/uae-leading-the-way-in-sustainable-agriculture.html>, (accessed May 5, 2023).

76 Victoria Masterson. "Dubai has the 'world's largest' vertical farm - is this the future of agriculture?" World Economic Forum. May 13, 2022. <https://www.weforum.org/agenda/2022/05/vertical-farming-future-of-agriculture>.

77 Bowen, Andrew. "The GCC's Complicated Affair with Iran." AEIdeas. September 13, 2017. <https://www.aei.org/foreign-and-defense-policy/middle-east/the-gccs-complicated-affair-with-iran/>.



Railway project was approved by all member states in 2009 but lost momentum after political friction and economic stagnation. However, plans have been revitalized and some officials announced hopes of the railway being in operation by 2025.⁷⁸ To connect Iran, however, is a challenge. First and foremost, because GCC countries do not share a border with Iran, Iraq must be included in the connection of these lines. Sea connectivity can also decrease the environmental footprint of the transportation of goods and people such as container shipping, if the GCC and Iran improve port efficiency. Port efficiency can be improved by reducing congestion, improving communication, investing in technology and infrastructure, and improving traffic flow.⁷⁹

4.6 Nuclear Safety and Regulation

Since the Saudi-Iran negotiations held in Beijing in March 2023, the two countries have been able to revive their diplomatic relationship, and this could be the first step to a nuclear safety agreement. Further restoration of diplomatic relations can possibly re-instigate the revival of the Joint Comprehensive Plan of Action (JCPOA).⁸⁰ In exchange for sanctions relief, Iran and the US agreed on restrictions on Iran's nuclear program in 2016 (from which the U.S. subsequently withdrew in 2018). Iran pledged to limit the manufacturing process of plutonium and highly enriched uranium under the terms of the deal and to use its nuclear facilities only for

peaceful purposes. The agreement also placed restrictions on Iran's ability to operate certain types and numbers of centrifuges. In order to assure compliance with the accord, the treaty also included monitoring and verification mechanisms that gave access to Iran's nuclear facilities to the International Atomic Energy Agency (IAEA). A Joint Commission was also created as part of the agreement to oversee the implementation and settle disagreements.⁸¹ Whether it be the revival of the JCPOA, or something else, the GCC and Iran could negotiate regulations on Iran's nuclear program to prevent future tensions.



Source: [Google image](#)

78 Oxford Business Group, "How the GCC Railway could revolutionise trade and transport in the Gulf." Economic Update. May 11, 2022. <https://oxfordbusinessgroup.com/articles-interviews/how-the-gcc-railway-could-revolutionise-trade-and-transport-in-the-gulf>.

79 Cambridge Entrepreneur Academy. "Tips for Achieving Sustainable Sea Transport." 2023. <https://www.cambridgeentrepreneuracademy.com/achieving-sustainable-sea-transport/> (accessed May 5).

80 Ali Harb. "Iran-Saudi Arabia deal not a setback for US, analysts say." Al Jazeera. March 16, 2023. <https://www.aljazeera.com/news/2023/3/16/iran-saudi-arabia-deal-not-a-setback-for-us-analysts-say>.

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Table 3: Proposed Solutions to Mitigate Environmental Issues

Solution	Scope	Opportunity	Challenge
Energy transition	Climate change	Contribution to decarbonization Increased energy security Reduced reliance on fossil fuels	High investment cost for infrastructure Limited storage technology
Eco-tourism and conservation	Biodiversity Dust Storms	Diversification of economy Preservation/conservation	Limited governance systems and infrastructure
Water management	Water scarcity	Access to clean water Reduce water-related conflicts	Limited water management technology
Sustainable agriculture	Biodiversity Water scarcity	Increased food security	Limited agriculture-related technologies High demands for land and water resources
Connected and green transportation lines	Climate change Air pollution	Reduced emissions Improved access to transportation Improved trade	High investment cost
Nuclear safety and regulation	Nuclear pollution	Increased safety and security Reduced political friction	Ensuring transparency and accountability

5. Recommendations

To conclude, this paper highlights four key recommendations for the mitigation and adaptation of environmental issues that the GCC countries and Iran face. While this region is vulnerable to adverse transboundary environmental issues such as climate change, water scarcity, and dust storms, the inoperative ROPME is the only joint organization that exists to tackle such issues.

5.1 Management

There are several management solutions that may be used to solve the different environmental issues confronting the GCC and Iran. Energy efficiency initiatives, the development of renewable energy sources and the implementation of carbon levies are all crucial for combating climate change. Investments in water recycling and desalination technology, water consumption reduction, and encouraging sustainable farming practices may all help manage water shortages. Increasing plant cover, mitigating land degradation, and strengthening air quality monitoring and forecasting systems are crucial measures in addressing sand and dust storms. Protecting and restoring natural ecosystems, supporting sustainable land use methods, and improving legislation pertaining to biodiversity protection can all help conserve biodiversity. Low-emission transportation systems, greener industrial technology, and stronger air quality regulations may all be implemented to lessen air pollution. Improving nuclear waste management procedures, fostering global collaboration on nuclear safety and security, and tightening restrictions on nuclear activity are essential first measures in the fight against nuclear pollution. A thorough strategy



Source: [Google image](#)

to address environmental challenges must also include efficient water management and governance, sustainable land use practices like integrated coastal zone management, managing protected areas, stepping up conservation efforts, monitoring, enforcement, regulation, and standardization, emissions control, waste management, and decontamination.

5.2 Regulation

The GCC and Iran may put in place various management measures to solve environmental issues such as water scarcity, sand and dust storms, biodiversity loss, air pollution, and nuclear contamination. One strategy is to raise public knowledge of the advantages of recycling and reusing wastewater while lowering the technical difficulties involved in doing so. The urban design may also be employed to lessen wind erosion, and it's possible to do cooperative environmental evaluations for border rivers like the Karun River and the Shatt al-Arab to guarantee ecosystem health and water quality. To track development and pinpoint areas for improvement, regular testing and monitoring are also crucial. Best practices for managing nuclear waste can be facilitated by

international collaboration with organizations like the International Atomic Energy Agency (IAEA). Implementing regulations on emissions reduction and carbon pricing, creating a carbon market, strengthening water use laws and regulations, creating a water allocation system, enforcing laws and regulations related to land use and protection of natural habitats, creating a sand and dust storm warning system, creating protected areas, and enforcing laws and regulations related to wildlife conservation are additional strategies to address environmental issues. The GCC and Iran may contribute to a more sustainable future and lessen the effects of environmental deterioration by implementing these steps.

5.3 Investment

Investing in diverse projects and technologies can help address a number of environmental challenges. Climate change can be combated by supporting energy efficiency initiatives and investing in renewable energy projects. Water scarcity can also be addressed by funding water recycling and desalination technology and encouraging sustainable agriculture methods. Reforestation and land rehabilitation efforts, as well as the



Source: Google image

development of new technology for sand and dust storm forecasting and mitigation, can help address sand and dust storms. Supporting sustainable land use methods and investing in projects to manage and restore protected areas will help stop the loss of biodiversity. Both air pollution and nuclear pollution can be reduced by funding low-emission transportation and energy technology, encouraging environmentally friendly business practices, and funding nuclear waste management and safety technologies. Additionally, improving desalination technology, altering the types of crops raised and exported, spending money on research and technology development, increasing the number of agreements for renewable energy (other than nuclear), promoting water treatment, and encouraging sustainable agricultural practices can all help address various environmental challenges.

5.4 Strategies

Addressing issues that affect several nations and areas necessitates joint management measures. Countries in the Gulf region have teamed up to create collaborative strategies and activities to

deal with a variety of environmental issues. These collaborative efforts include creating targets and strategies to combat climate change, joint water management plans to address water scarcity, land use and habitat protection strategies to combat sand and dust storms, and joint management plans for protected areas to combat biodiversity loss. Regional cooperation initiatives have also included working together on water desalination projects, enhancing water management and conservation procedures, and exchanging knowledge and data on vital resources like water and air quality. To ensure the sustainable and equitable use of shared resources, the region is also collaborating with international organizations on a regional action plan. Managed together are migratory bird species, fisheries, marine habitats, air pollution, the effects of climate change on water supplies, and the management of desertification to save local populations and biodiversity. The Gulf region can encourage a sustainable and resilient future for all by cooperating and sharing knowledge and resources.



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