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Policy instruments aimed at mitigating climate change: CO2 emissions reduction

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Climate change has become a concern for governments, researchers, managers and policymakers the world over. The Paris Agreement on Climate Change and the decisions of the Conference of the Parties to the United Nations Framework Convention on Climate Change. provide a global framework for governments in an effort to respond to the climate crisis. Similarly, Nationally Determined Contributions (NDCs), which are national climate action plans aimed at cutting emissions and adapting to climate impacts. Reflect measures in national climate change policies and strategies that are consistent with national development priorities. In this brief we will review four policy instruments of importance to Qatar which are aimed at achieving our goal of sustainable environment.

Extreme weather events, including heatwaves, heavy rains, floods, and droughts, threaten human health, security, well-being, livelihoods, food and water supplies, infrastructure, economic growth, and energy. Recent climate change-related events have also caused significant damage and fatalities. Additionally, extreme heat, prolonged drought, increased flooding, and severe storms are occurring in various parts of the world. Furthermore, based on a recent UNEP report, climatic conditions caused by rising temperatures resulting from climate fluctuations lead to increased energy prices and, thus, have significant impacts on the consumer price indexes of low- and middle-income countries.

Gulf Cooperation Countries, in particular, face existential challenges due to the accelerating climate crisis including desertification, loss of biodiversity, water scarcity, and rising sea levels. The impact on the Gulf region is worse due to its characteristics such as high temperatures, high humidity, arid lands, and salt seeping into freshwater.

Nearly 200,000 people are expected to be exposed to persistent coastal flooding by 2050[1]. Therefore, mitigating climate change will be necessary to improve food security, sustain agricultural production, and reduce the environmental burden[2]. In addition, the reduction of excessive greenhouse gas emissions and limitations on the unnecessary utilization of scarce resources will become increasingly urgent.

Climate policy instruments revolve around the goal of global sustainability through the use of technology and are aimed at optimal energy usage in our daily lives. They involve helping to change economies and set them on a path of decarburization through the achievement of the goal of carbon emission reduction and devising plans to help reach targets, through renewables and the rapid deceleration of fossil fuel dependency. In addition, since petroleum and natural gas are non-renewable resources, their availability depends on optimal exploitation and utilization.

There are various ways of reducing the effects of climate change, and in this brief, our aim is to explore awareness gaps and structural and regulatory impediments to change. One way is the shifting toward energy-efficient innovation that can speed up the transition to a low-carbon emissions transportation system by using electric vehicles, thereby eliminating environmental burdens. We will also present some public policy tools aimed at reducing the rate of emissions including discussing topics related to types of renewable energy and their feasibility.

Behavioral Insights

Human activity are at the center of the climate crisis, and there is significant research evidence showing that human action has led to an increase in global temperatures.[3]. Therefore, understanding human behavior is critical to raising environmental awareness and educating people about the impact of their actions on the environment. Such awareness promotes a sense of responsibility and encourages individuals and communities toward more sustainable choices.

The application of behavioral science to climate change is also important in terms of understanding the readiness of humans to adapt to mitigation strategies. For example, our daily energy consumption affects our environment, and people make numerous decisions around energy consumption. Thus, insights into human behavior can help design more effective environmental policies, as human knowledge, awareness, beliefs, attitudes, and behavior toward sustainability should guide internal policy interventions.[4] Equally important are innovative solutions in driving progress in areas such as renewable energy, waste reduction, conservation, and the use of environmentally friendly technology.

Electric Cars

Electric vehicles are an energy-efficient way to reduce greenhouse gas emissions. Consequently, these vehicles have increased in popularity in recent years. This increase also applies to Qatar. In 2021, Al-Buenain et al. (2021) explained the comparison between electric and gasoline vehicles and found that even though the results showed promising results toward switching to carbon-neutral mobility vehicles, there was still a lack of willingness toward electric vehicle adoption in Qatar.[5] Nevertheless, when Qatar hosted FIFA World Cup 2022, the leadership collaborated with Hyundai and Kia to provide eco-friendly transportation, including electric and hybrid cars and buses, during the tournament.[6] By the end of 2022, 25% of the country's public transportation comprised the fully-electric, state-of-the-art metro system.[7] Moreover, Qatar launched its first electric car under EcoTranzit exclusive intellectual property rights in 2023 during one of the events hosted in Doha (see figure 1). Thus, working toward having a sustainable transportation system in Qatar could reduce pollution and greenhouse gas emissions in the future. The success of using electric cars during FIFA and other sporting events encourages people to use the metro, thereby contributing to climate change mitigation.

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Figure 1: The Qatar Electric Vehicle

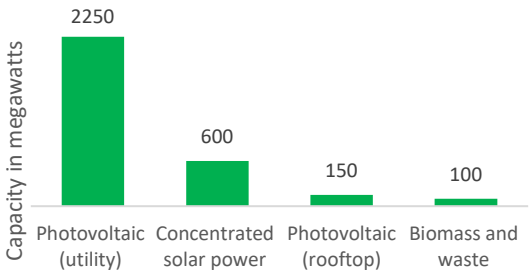
Doha News. Retrieved from https://dohanews.co/qatar-launches-first-electric-vehicle-company-with-intellectual-property/

Renewable Energy

By 2030, Qatar aims to generate 20% of its electricity from renewable sources and has been taking accelerating steps toward achieving this goal. The primary renewable energy sources currently being used are solar energy and waste-to-energy sources. In 2022, Qatar opened its first major solar energy plant called AlKharsaah. The plant has more than 1.8 million solar panels, and Qatar expects to generate around 2 TWh of electricity annually. Moreover, 50 MW of electricity per day is generated by the Domestic Solid Waste Management Centre in Mesaieed.[8] Regarding future renewable energy in Qatar, figure 2 predicts that by 2030, the estimated capacity of photovoltaics (utility) will be the highest compared to other types of renewable sources by 2250 MW. The constant search for other renewable sources could improve the

environmental situation in Qatar and reduce the impact of emissions.

Figure 2: Estimated capacity of renewable energy in Qatar in 2030, by type (in megawatts)



Statista. Retrieved from https://www.statista.com/statistics/958460/qatar-estimated-renewable-energy-capacity-by-type/

Sustainable Cities

Concerns about climate change and increased attention to having healthy living standards and human capital development have redirected city planners to creating sustainable cities. Sustainable cities are a knowledge-based city model that reflects the usage of energy efficiency, efficient transportation systems, and sustainable buildings that use less or optimal energy.[9] One example of Qatar's sustainable cities is Msheireb Downtown Doha (MDD), which has one of the highest concentrations of gold or platinum ratings' in energy and environmental design-certified sustainable buildings.

The materials used in building construction are eco-friendly, and the glass is heat-isolating to reduce the energy usage required for cooling.

As a result of the improvement in building design, energy usage decreased by 30%. Photovoltaic solar panels and solar hot water panels are used to generate electricity.

Green transport is also available in the city, such as trams, bicycles, and walking lanes. The city has an advanced system to collect and segregate waste, and most of the waste is recycled or reused.[10] Sustainable cities are a precious gift for future generations. An accelerating climate crisis requires short-term measures aimed at mitigation and a long-term transition to a climate resilient economy that is responsive to dynamic changes imposed by the emerging crisis. It is therefore critical to discuss climate change issues from various disciplines to make it more understandable and inclusive and enhance the policy advice to governments. However, understanding and discussing other policy instruments, such as market-based management tools (e.g., "carbon credits" or the "carbon market") are also vital.

References:

1. Carnegie endowment for international Pease 2023. the Carnegie Endowment strategic ideas and independent analysis. Accessed on 18 march 2024. Carne Endowment for International Peace gives support for the most difficult problen future generation.
2. Köberle, A. C. (2022). Food security in climate mitigation scenarios. *Nature Fo* 98-99.
3. Trenberth, K. E. (2018). Climate change caused by human activities is happer already has major consequences. *Journal of energy & natural resources law*, 481.
4. Steg, L. (2023). Psychology of climate change. *Annual Review of Psychology*, 421.
5. Al-Buenain, A., Al-Muhannadi, S., Falamarzi, M., Kutty, A. A., Kucukvar, M., & C. (2021). The adoption of electric vehicles in Qatar can contribute to net carb emission reduction but requires strong government incentives. *Vehicles*, *3*(3),
6. Johnson, P. (2022). Hyundai to help FIFA World Cup achieve carbon neutralit electric vehicle and bus rides. Electrek. Retrieved from https://electrek.co/2022/10/20/hyundai-providing-electric-vehicles-and-buses-f world-cup/
7. Qarjouli, A. (2023). Qatar launches its first electric vehicle company with intell property. Doha News. Retrieved from https://dohanews.co/qatar-launches-firs vehicle-company-with-intellectual-property/
8. Jones, A., Prescott, P., & Olufemi, G. Qatar's plans for renewable energy. (20 Dentons. Retrieved from https://www.dentons.com/en/insights/alerts/2023/may/10/qatars-plans-for-rene energy
9. Sodiq, A., Baloch, A. A., Khan, S. A., Sezer, N., Mahmoud, S., Jama, M., & Ab (2019). Towards modern sustainable cities: Review of sustainability principles trends. *Journal of Cleaner Production*, *227*, 972-1001.
10. Msheireb Downtown Doha. Sustainability. Retrieved from https://www.msheireb.com/msheireb-downtown-doha-about/sustainability/DOI:10.1080/02646811.2018.1450895

Policy Recommendations

1. The development of public and private charging infrastructure or systems will encourage individuals to adopt electric vehicles and cope with technology for a better life and lower fuel prices.

2. The inclusion of electric vehicles in sustainable mobility programs by the Ministry of Transport and Communication will fulfill the sustainable development goals of cleaner energy, emissions reduction, and good health.

3. Understanding human attitudes and behaviors toward climate change is essential not only because humans are a major cause of global climate change but also because of their impact on the degree of response to mitigate the effects of the crisis.

4. The government and private businesses should support environmentally oriented projects in banks providing project funding to advance the development of the “green” economy.

5. Sustainable cities are one way of achieving the Sustainable Development Goals without prejudice to any group in terms of promoting equity and contributing to the development of countries by providing sustainable services for future generations.