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The potential role of carbon taxes in encouraging a shift to renewable power sources in Qatar

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Abstract

Qatar is a resource-endowed country where the oil, gas, power, and transport sectors produce high levels of CO_2 emissions. To diversify its economy and reduce CO_2 emissions from these sectors to improve environmental sustainability, restructuring the current tax system is inevitable. Therefore, tax reform is needed, and it may also contribute to environmental policy through introducing carbon taxes. To be in harmony with other developed countries, the aim of this article is to present the role of carbon taxes towards environmental development and to assess the possible introduction of carbon taxes in Qatar. In doing so, an analysis of the strengths, weaknesses, opportunities, and threats (SWOT) was applied. The results of the analysis should serve as a basis for providing specific policy recommendations with regard to using carbon taxes to overcome environmental issues and to diversify government revenue.

Keywords: carbon taxes, tax policy, SWOT analysis, Qatar

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1. INTRODUCTION

Oil and gas production techniques and consumption patterns have a significant impact on the environment. To address these environmental problems, behavioural changes are required, which involve substantial economic costs affecting the labour market, production activities, and capital markets. This calls for the development of specific policies and programs to deal with environmental issues. In this context, governments worldwide have developed environmental policies as a means of achieving environmental and sustainable development goals. Furthermore, policymakers are utilising incentive-based tools to ensure that environmental solutions are found at a lower cost, to correct negative externalities associated with environmental degradation, and to raise revenues for specific purposes (Tan et al., 2022). This draws attention to the importance of introducing specific economic instruments to control air pollution and to manage natural resources effectively.

Developed countries have long prioritised environmental policies, particularly in the European Union (EU) and Organisation for Economic Co-operation and Development (OECD) nations. These countries employ a variety of regulations and related measures to tackle the impact of environmental challenges. For example, the EU has set itself the ambitious goal of reducing greenhouse gas emissions by 55% by 2030 and achieving climate neutrality by 2050. These goals, along with the accompanying fiscal and regulatory instruments, are outlined in the European Green Deal strategy. Achieving them requires stringent regulations as well as institutional and environmental reforms (Fatur Šikić & Hodžić, 2023).

The range of policy instruments available to address such challenges includes carbon taxes, fees, tradable permits, deposit-refund systems, and subsidies. These tools are designed to tackle the negative externalities arising from greenhouse gas (GHG) emissions – mainly carbon dioxide (CO_2) and methane (CH_4) (Faure & Weishaar, 2012). Among these instruments, carbon pricing mechanisms have emerged as particularly effective tools.

Although carbon taxes and carbon trading systems are often presented as distinct policy tools, they share the same ultimate objective – placing an explicit price on carbon emissions to internalise the social cost of pollution (Pigou, 1920; High-Level Commission on Carbon Prices, 2017). A carbon tax fixes the price per tonne of CO_2 emitted, providing certainty over costs, while a carbon trading (cap-and-trade) scheme fixes the total emission level and allows firms to trade permits (Tietenberg, 2006; Metcalf & Weisbach, 2009). In practice, many countries integrate features of both systems to achieve flexibility and efficiency in emission reductions (World Bank, 2023; OECD, 2022). Therefore, throughout this article, the term *carbon tax* refers broadly to carbon pricing mechanisms aimed at mitigating greenhouse gas emissions within the Qatari context.

Based on this framework, carbon taxes are gaining increasing importance as a key policy instrument contributing to several Sustainable Development Goals (SDGs). For instance, they support SDG 7 ('Affordable and Clean Energy') and SDG 13 ('Climate Action') by incentivising cleaner energy use and reducing emissions. Furthermore, taxes play a central role in revenue mobilisation, enabling governments to secure funds for SDG-related initiatives and long-term sustainable development.

Motivated by these international experiences, many developing countries have begun recognising the vital role of environmental policies in achieving sustainable development. Recently, the State of Qatar has also demonstrated growing awareness of environmental challenges and the need for an integrated environmental strategy. In response, the government launched the National Environmental and Climate Change Strategy in October 2021. The strategy acknowledges that rapid economic growth in Qatar has led to higher consumption of water, electricity, and other resources, resulting in greater waste generation and rising greenhouse gas emissions. It identifies clear objectives and measurable indicators to guide the nation's transition toward sustainable development (Ministry of Environment and Climate Change (MECC), Qatar, 2021).

However, despite these commendable efforts, Qatar's environmental policy does not explicitly consider the potential role of fiscal instruments, particularly carbon taxes. This omission raises a central research question: *What would be the possible effects of employing carbon taxes to achieve Qatar's environmental policy objectives?* To address this question, the study applies a SWOT analysis to evaluate the opportunities and challenges of introducing such taxes in Qatar. In doing so, the article pursues three key aims: (1) to review international practices of carbon taxation and their environmental impact; (2) to assess the potential implications of introducing carbon taxes in Qatar, and (3) to propose specific policy recommendations for their effective implementation.

It is therefore essential to distinguish between broad environmental taxation and a targeted carbon tax. Environmental taxes encompass a range of levies on pollutants such as plastic waste, water discharges, or solid waste management (OECD, 2010; Fullerton, 2011). By contrast, a carbon tax is specifically designed to address emissions of greenhouse gases, particularly CO_2 (Metcalf & Weisbach, 2009; High-Level Commission on Carbon Prices, 2017). This study focuses solely on assessing the economic and environmental implications of introducing a carbon tax in Qatar. Thus, it does not address other non-carbon environmental levies, ensuring conceptual consistency and alignment with the article's main objective (World Bank, 2023).

The remainder of the article is structured as follows: section 2 examines the significance of carbon taxes for sustainable development, while section 3 discusses the importance of carbon taxes in Qatar. Section 4 applies a SWOT analysis to assess their relevance for Qatar, and section 5 presents the conclusions and policy implications.

2. THE SIGNIFICANCE OF CARBON TAXES TOWARD ENVIRONMENTAL DEVELOPMENT

Countries worldwide are prioritising sustainable development through policies addressing socioeconomic and environmental challenges. Carbon taxes have emerged as a key tool for tackling environmental issues in both developed and developing nations (Chu, 2024). The global focus on environmental development aligns with the United Nations' 17 Sustainable Development Goals (SDGs), particularly SDG 13, which emphasises climate action to combat issues like greenhouse gas (GHG) emissions, rising temperatures, droughts, and sea-level rise (United Nations, 2021).

GHG emissions, primarily from fossil fuels such as oil and gas, contribute significantly to climate change through carbon dioxide (CO_2), methane, and other gases. To address this, countries implement measures like carbon taxes or carbon trading systems, as seen in the European Union's emissions trading scheme (Parry, Norregaard & Heine, 2012). Carbon taxes, often called Pigouvian taxes, target negative externalities by imposing a tax equal to the marginal damage costs, internalising the social cost of pollution. This

corrects market failures by raising production and consumption costs, thereby reducing pollution and improving economic efficiency (Eskeland & Jimenez, 1992; Sandmo, 2008; Hsu, 2021).

Carbon taxes also embody the polluter pays principle (PPP), which holds that polluters should bear the costs of environmental and health damages (European Commission and Fogleman, 2024). By increasing costs for polluters, the PPP incentivises cleaner production techniques to reduce emissions and associated charges (Luppi, Parisi & Rajagopalan, 2012). This aligns with two of the UN's four environmental policy principles: the polluter pays principle and the principle of prevention, alongside the precautionary principle and common but differentiated responsibilities (United Nations, 2021, pp. 26-27).

Economically, carbon taxes correct market failures caused by negative externalities from CO_2 emissions. Legally, the PPP assigns responsibility to polluters, requiring them to bear the costs through taxes or levies. These principles justify the use of carbon taxes to address environmental challenges. Often termed 'green taxes', these aim to protect the environment and reduce GHG emissions by influencing producer and consumer behaviour through higher costs, leading to socially efficient production and consumption levels (Mpofu, 2022).

The OECD distinguishes between carbon taxes and environmentally related taxes based on their tax base. Carbon taxes target physical units with proven negative environmental impacts, such as carbon emissions, while environmentally related taxes encompass broader compulsory payments to governments on environmentally relevant tax bases (OECD, 2008, p. 180). The OECD classifies environmentally related taxes into energy, transport, pollution, and resource taxes (OECD, 2023, p. 15). Herrera Molina (2012) further differentiates carbon taxes into those primarily raising revenue with environmental benefits and Pigouvian taxes focused on mitigating externalities (Herrera Molina, 2012).

Carbon taxes serve dual purposes: protecting the environment and generating government revenue. This dual role highlights their potential in oil-exporting countries like Qatar, where implementing such taxes could address environmental challenges while supporting fiscal objectives. The following section explores the justification for introducing carbon taxes in Qatar.

3. THE IMPORTANCE OF CARBON TAXES IN QATAR

This section justifies the proposal for a carbon tax in Qatar by outlining two primary reasons: (1) mitigating the impact of greenhouse gas (GHG) emissions through a carbon tax, and (2) diversifying government revenue through the implementation of a carbon tax.

3.1 Environmental policy and carbon tax

The first effect of carbon taxes is their role in mitigating the negative externalities associated with oil and gas production. In this context, the European Commission (2024) report on GHG emissions identifies the level of GHG emissions worldwide and provides more details for each country. Based on this data, the GHG per capita emission in Qatar is high compared with the EU average and the worldwide average. Furthermore, GHG emissions in Qatar were the highest among GCC countries and other leading nations. This is shown in Table 1.

Table 1: GHG Country per Capita in the Period 2016-2023 (t CO2eq/cap/yr)

Country	2016	2017	2018	2019	2020	2021	2022	2023
United Arab Emirates	28.264	27.033	25.002	25.985	25.407	25.859	26.601	26.291
Australia	25.029	25.089	24.678	24.281	23.016	22.596	21.888	21.754
Austria	9.495	9.749	9.393	9.520	8.799	9.172	8.549	8.248
Bahrain	41.569	39.582	37.740	38.476	37.216	36.346	35.096	35.251
Kuwait	36.397	35.109	35.445	35.361	34.636	36.184	37.400	37.448
Libya	10.857	12.891	13.695	13.984	9.664	13.357	13.044	13.913
Oman	25.466	24.370	24.111	23.509	21.984	22.743	23.349	23.427
Qatar	54.450	52.843	52.069	51.937	50.200	50.398	50.005	52.565
Saudi Arabia	23.463	22.847	21.951	21.631	21.120	21.302	21.984	22.174
United States	19.263	18.960	19.394	18.878	17.112	17.969	17.987	17.608
EU27	8.791	8.836	8.645	8.295	7.638	8.062	7.849	7.264
GLOBAL TOTAL	6.572	6.608	6.687	6.649	6.330	6.548	6.534	6.594

Source: EU Emissions Database for Global Atmospheric Research (EDGAR), 2024- GHG emissions

In light of the preceding analysis of Qatar's emissions profile and the need for effective carbon pricing, the country's Third National Development Strategy (2024–2030) sets forth a comprehensive framework to advance environmental sustainability and economic diversification (Planning and Statistics Authority, Qatar, 2024). Central to this strategy is a commitment to reduce greenhouse gas (GHG) emissions by 25% relative to the business-as-usual scenario by 2030. Achieving this target requires coordinated action across high-impact sectors, including oil and gas, transportation, and electricity generation, through measures such as the adoption of advanced technologies, enhancements in energy efficiency, and strengthened regulatory enforcement (Planning and Statistics Authority, 2024, pp. 27-28). Complementing these objectives, the National Climate Change Action Plan identifies four strategic interventions to address climate change: (1) community awareness and communication; (2) environmental education and human capital development; (3) technology, research, and development, and (4) incentives and regulations (Ministry of Environment and Climate Change, 2021).

Among these interventions, the incentives and regulations component is particularly salient for its potential to drive systemic change through economic and policy levers, and it encompasses two primary dimensions. The first dimension highlights the role of government subsidies and funding mechanisms to incentivise private sector engagement in addressing climate challenges. In contrast, the second dimension centres on regulatory instruments, such as carbon trading systems and carbon taxes, to curb

emissions and internalise environmental externalities. Notably, the existing framework lacks a comprehensive examination of carbon taxes and their efficacy in mitigating climate impacts, underscoring the critical contribution of this study in evaluating the feasibility and implications of implementing such taxes to reduce GHG emissions and advance climate resilience.

3.2 Carbon tax and revenue diversification

Qatar's economy is heavily dependent on hydrocarbon resources, which constitute the country's principal exports and the main source of public revenue. This dependence has two major implications: first, it creates fiscal vulnerability to fluctuations in global energy markets; and second, it limits the development of a broad-based tax system, as non-hydrocarbon taxes contribute only marginally to total revenue.

Table 2: The Ratio of Tax Revenue to Total Government Revenue (2020-2025) (QAR billion)

	2020	**2021**	**2022**	**2023**	**2024***	**2025***
Total revenue	171.2	193.7	299.5	269.3	276.6	271.8
Oil	24	43.4	57.6	42.4	41.1	39.2
LNG	39.9	56.3	118.2	95.7	113.1	108
Investment Authority	64.2	55.4	74.3	81.8	73.8	74.5
Corporate income tax	27.5	21.4	26.9	29.4	28.1	28.9
other revenue	15.6	17.2	22.5	20	20.5	21
Tax/ total revenue	16.1%	11.0%	9.0%	10.9%	10.2%	10.6%
Average ratio	11.30%					

Source: International Monetary Fund (IMF) (2025); * estimated.

Table 2 indicates that the tax-to-revenue ratio averaged 11.3% during 2020-2025, reflecting the narrow fiscal base. Empirical studies have emphasised the need to diversify government revenue through comprehensive tax reforms (Abdellatif, Eid & Tran-Nam, 2017). In response to similar fiscal challenges, four Gulf Cooperation Council (GCC) countries have introduced value added tax (VAT) as a diversification tool, while Qatar and Kuwait have yet to adopt such measures due to economic and administrative considerations.

Given these structural characteristics, a carbon tax could serve as a viable instrument for achieving a 'double dividend' by simultaneously broadening the fiscal base and reducing greenhouse gas emissions (Goulder, 1995). Accordingly, assessing the potential introduction of a carbon tax in Qatar is both economically and environmentally justified.

4. THE SWOT ANALYSIS OF CARBON TAXES

4.1 An overview of SWOT analysis

Carbon taxation represents a key component within the broader suite of environmental policy instruments designed to internalise negative externalities and promote sustainable development. By assigning a monetary cost to carbon emissions, such taxes seek to incentivise behavioural change, reduce pollution and resource depletion, and encourage the adoption of cleaner and more energy-efficient technologies (Van den Eijnde, 2022). Despite these advantages, the implementation of carbon taxes often faces technical and political challenges. From a technical standpoint, determining an efficient and equitable tax rate is complex due to measurement difficulties and uncertainty regarding the social cost of carbon. Politically, resistance may arise from public opposition and lobbying by interest groups that perceive carbon pricing as economically burdensome (Stoianoff & Walpole, 2016).

Empirical evidence from different national contexts underscores both the opportunities and constraints associated with carbon taxation. Tatariyanto (2023), employing a SWOT analysis of Indonesia's environmental policy framework, found that introducing a carbon tax could increase the cost of carbon-intensive activities, thereby discouraging forest fires and reducing CO_2 emissions. Similarly, Arbolino and Romano (2014) highlighted the fiscal dimension of carbon taxation through revenue recycling mechanisms, whereby revenues are redirected to lower distortionary taxes on labour and capital. In a comprehensive assessment, Andersen, Speck and Mautone (2011) identified five potential 'dividends' of carbon taxation: increased public revenue, enhanced productivity and innovation, employment creation, positive environmental outcomes, and a more equitable distribution of the tax burden.

Drawing upon this body of evidence, the present study applies a SWOT analytical framework to evaluate the feasibility of introducing a carbon tax in the State of Qatar as a mechanism to advance environmental sustainability and economic diversification. SWOT analysis is a widely used strategic assessment tool for identifying the strengths, weaknesses, opportunities, and threats associated with a particular policy or initiative (Hodžić, 2019). Table 3 presents the results of the SWOT analysis of carbon taxation in general, providing a conceptual foundation for assessing its potential application within Qatar's policy context.

Table 3: SWOT Analysis of Carbon Taxes

Strengths	**Weaknesses**
- reduces carbon emissions and mitigates climate change - adoption of encouraging clean energy - carbon tax revenues will enable the reduction of taxes on capital and labour - double dividend (reduce pollution and replace other taxes that slow economic growth), which will increase economic growth rates. - reduction of social and economic inequalities - improving public health as a result of mitigating carbon emissions. - contributing to fiscal sustainability by raising revenue, and may have distributional implications	- regressive nature, as the carbon tax can disproportionately impact lower-income groups - uncertainty around emissions impact (problems with model forecast studies) - tax collection costs may undermine competitiveness - effectiveness in comparison to other policies (direct spending on mass electric vehicle adoption, renewable energy investments, infrastructure upgrades, etc.) - revenues are significantly lower in comparison to other tax revenues (income tax, value added tax, etc.)
Opportunities	**Threats**
- fund green initiatives (clean technology in research and development (R&D), green public transport, sustainable infrastructure projects, resilience funds for vulnerable groups, etc.) - expanding government revenues by implementing a carbon pricing mechanism - drive environmental innovation and workplaces - stimulate investments in more ecological technologies and sustainable systems of production - raising environmental awareness	- political obstacles because of the lack of political will to implement carbon taxes, and sometimes the conflict between the federal and state governments - change in human behaviour - complex policy design (choosing appropriate, adjustable tax levels, etc.) - lack of both proper environmental data and the expertise required to analyse it across revenue authorities - it takes time for businesses and consumers to accept the tax - additional burden on the consumer and the economy, which may cause tax evasion (for example, companies are trying to mask the actual pollution level) - can reduce profitability by not encouraging investments

Building on the general SWOT framework of carbon taxation, this section analyses each component in detail, emphasising its relevance to Qatar's prospective carbon tax implementation.

4.2 Strengths of implementing carbon taxes

The Table above highlights several advantages of introducing carbon taxes. They are grouped into two main points: (1) strengthening environmental regulations in Qatar, and (2) restructuring the tax system.

1. Strengthening environmental regulations

Table 1 indicates that CO_2 emission per capita in Qatar was the highest among the countries in the region. This indicates that there is inadequate environmental regulation that influences the production or consumption of products that result in high levels of CO_2. Hence, the introduction of carbon taxes will increase the production costs of polluting industries, which discourages polluting production activities and increases the level of innovation to minimise the level of air pollution. In this context, a number of studies have been carried out indicating the positive effect of carbon taxes on the environment. For example, Miceikiene and co-authors (2018) found that a carbon tax has a strong impact on countries with lower economic growth and lower tax rates and a similar strong impact on developed countries, as imposing a carbon tax has led to a reduction in the level of CO_2 emissions and generated revenue to the government. Moreover, a similar result was obtained by a study carried out by Wang (2024). Accordingly, it is expected that the introduction of carbon taxes in Qatar will reduce the level of pollution and increase the level of environment-related innovations. This expectation aligns with the results of a review of carbon tax on 30 countries that was carried out by Metcalf (2021). It indicates that carbon taxes combined with other environmental measures have reduced the level of CO_2 emissions.

2. Restructuring the tax system

The tax system in Qatar is not comprehensive as there is only income tax (imposed by Law 24 of 2018) and excise tax. Further, Qatar aims to diversify government revenue through increasing the share of tax revenue, which requires introducing new taxes (Abdellatif and Tran-Nam, 2023). However, Qatar has not introduced VAT to date, despite four countries of the GCC introducing it. Therefore, there is an opportunity to restructure the tax system through introducing a carbon tax as an alternative to other taxes which face difficulty in being introduced.

4.3 Weaknesses of implementing carbon taxes

There are a number of weaknesses related to introducing carbon taxes, as shown in Table 3. Among these weaknesses are:

1. the regressive nature of carbon taxes and their impact on income inequality. Some studies argue that the burden of carbon taxes is borne by the lower-income group, especially carbon taxes on electricity and home heating systems (Oueslati et al., 2018). Further, in Qatar, the majority of people use private cars, while a small portion of the population with lower income (usually so-called ‘blue collar’ workers) tend to use public transportation, so introducing carbon-related taxes may have a negative impact on income inequality (Shaaban, 2018);

2. uncertainty around emissions impact. Despite many studies proving the effectiveness of carbon taxes in minimising or reducing CO_2 emissions, conversely, there are a number of studies that are sceptical about assessing the

exact impact of carbon taxes on CO_2 emissions. However, the design of the carbon tax may take into account such a weakness to ensure designing an effective tax base (Mintz-Woo, 2021). In addition, there are a number of recommendations by the OECD and the UN regarding imposing carbon taxes. Accordingly, Qatar may be guided by such recommendations to design effective carbon taxes (Seung-Joon, 2007).

4.4 Opportunities for implementing carbon taxes

In terms of opportunities, we can conclude that the best option for the State of Qatar is to increase government revenues by introducing a carbon pricing mechanism and raising environmental awareness.

1. Carbon pricing mechanism

This mechanism works by charging fees for issuance and/or incentivising less issuance. In this situation, the focus is on taxing the large suppliers and distributors of fossil fuels in the supply chain. This imposes a monetary price that is directly proportional to the level of emissions. It also incentivises households and businesses to look for alternatives with lower emissions in order to avoid paying higher taxes (Baranzini, Goldemberg & Speck, 2000). Emissions trading schemes (ETS) and carbon taxes are two main types of carbon pricing mechanisms. While distinct in operation – carbon taxes set a fixed price on emissions, whereas an ETS sets a cap on emissions and allows trading of permits – they can achieve similar outcomes in reducing GHG emissions and can sometimes be integrated or used complementarily. For instance, a hybrid system might combine a carbon tax with an ETS to provide price stability while maintaining emission caps. There are many benefits to introducing these mechanisms, such as reducing carbon emissions, mitigating climate change, promoting clean energy and technology, and decarbonising. For example, the European Union has introduced the ETS, which is the largest transnational carbon pricing scheme. It covers sectors such as electricity, industry, and aviation. It works on a monthly basis through the purchase of emission allowances at auctions (Bruvoll & Larsen, 2017). More than 40 countries and 20 cities worldwide have now introduced some form of carbon pricing mechanism. In the case of Qatar, this will depend to a large extent on national and economic circumstances as well as political will (OECD, 2024).

2. Environmental awareness

This element is crucial at the societal level to raise awareness not only at the national level but also at the local level and among vulnerable groups. It is important to show how local citizens can protect and conserve their natural resources. This involves recognising the importance of environmental protection for future generations and acting to reduce harmful impacts (Marsuni, 2021). Therefore, the State of Qatar should raise environmental awareness by promoting sustainable lifestyle workshops at all levels, using social media for environmental campaigns, organising educational seminars and workshops, and conducting clean-up campaigns.

4.5 Threats of implementing carbon taxes

If we focus only on the threats, in the case of Qatar, we will focus on the complexity in the implementation of the carbon border adjustment mechanism (CBAM) and the lack of sufficient knowledge of fiscal instruments and environmental data.

1. Complexity in the implementation of the carbon border adjustment mechanism

The European Union ratified CBAM in October 2023, which is going to be implemented in a number of stages. The CBAM obliges importers to pay the cost of emissions corresponding to the carbon footprint of imported products based on the ETS price. This reduces imports with higher carbon intensity, but does not create a level playing field for exports of less carbon-intensive products. The bulk of Qatar's exports comprises hydrocarbon products (e.g., oil and gas), and currently, oil and gas are excluded from CBAM. Nevertheless, by 2030, there will be a possibility to expand the scope of goods that are subject to CBAM, which may include oil and gas products (Roginko & Fazelianov, 2024). Therefore, it needs to be improved by refunding carbon prices for exports (free allowances for exports only) and/or by subsidising investments to reduce pollution. In this case, this will help to maintain the competitiveness of the domestic industry with domestic carbon pricing, reduce the risk of carbon leakage, and strengthen incentives for carbon pricing and mitigation action in other countries at the international level. However, apart from the numerous benefits, this can also imply a certain administrative burden (Zhong & Pei, 2024).

2. Lack of sufficient knowledge of fiscal instruments and environmental data

The purpose of taxes is not only to raise revenue, but also to influence the behaviour of individuals and companies. This behaviour in turn often has an impact on the environment by developing more environmentally friendly products and services (Metcalf, 2021, p. 260). For example, if a car registration tax is levied on the basis of CO_2 emissions, this will lead to higher prices. The result will be a shift towards hybrid or electric vehicles with lower CO_2 emissions. Another example is the aviation industry. In their study, Krenek and Schratzenstaller (2016) found that the current carbon price is too low to have a significant impact on travel behaviour and the emissions produced. Based on their findings, it is suggested that a significantly higher carbon price would be required to reduce the total number of passengers and thus the overall externalities of air travel. From this article, we can conclude that knowledge of fiscal instruments and the availability of environmental data should be significantly improved in order to analyse the impact of carbon taxes on the economy and society.

Based on the above strengths, weaknesses, opportunities, and threats, it can be concluded that the introduction of carbon taxes in Qatar is a complex matter. Many threats may arise during implementation, such as inadequate skills, insufficient knowledge of the behaviour and economic impact of tax instruments when setting charges, additional burdens on consumers (higher product prices) and the economy, lack of data, and lack of environmental awareness.

Therefore, careful design and implementation of carbon taxes in Qatar should consider many other aspects – administrative, political, and social – in addition to the economic aspect. Further analysis and a better understanding of these aspects could be extremely helpful for future policymakers.

4.6 Integrated upstream–downstream components of carbon taxes for Qatar

The EDGAR (2024) report (European Commission et al., 2024) provides detailed information on GHG emissions by sector, highlighting significant increases between 2005 and 2024. During this period, emissions rose most sharply in the power industry

(236%), transport sector (175%), and industrial combustion (211%), while fuel exploitation increased by 95%, with an overall sectoral average of 148% (Crippa et al., 2025, p. 220). GHGs include carbon dioxide (CO_2), methane (CH4), nitrous oxide (N_2O), hydrochlorofluorocarbons (HCFCs), and hydrofluorocarbons (HFCs), with CO_2 representing the major component. Qatar's government data further indicates that the bulk of CO_2 emissions originates from a few key industries: oil and gas, power and water, industrial processes, and road transport (Table 4).

Given that these sectors contribute the majority of emissions, designing a carbon tax that targets the oil and gas and energy-intensive industries could be an effective policy tool. Such a mechanism would not only incentivise reductions in emissions but also align fiscal policy with Qatar's broader goals of economic diversification and sustainable development. This emissions profile provides the foundation for identifying the type of carbon tax most suitable for Qatar's context.

Table 4: CO_2 Emissions in Qatar by Sector in 2023 (Million Tons)

Major Contributors	**Qatar's total emissions (CO_2 equivalent)**	**% contribution**
waste	413,538	0.66
enteric and manure	84,865	0.14
industrial process	5,312,667	8.51
refinery	656,353	1.05
oil and gas	31,174,617	49.95
power and water	16,611,469	26.62
road transport	4,553,199	7.3
building industry	3,599,838	5.77

Source: Qatar Open data 2023, https://www.data.gov.qa/pages/homepage/.

Globally, the treatment of the oil and gas sector under carbon pricing mechanisms exhibits substantial heterogeneity across jurisdictions, reflecting differences in economic structures, political priorities, and institutional capacities. While most implementing countries apply these mechanisms broadly to fossil fuel consumption in sectors such as heating, transportation, electricity generation, and industrial processes, the oil and gas industry often receives tailored accommodations to mitigate competitiveness risks and facilitate transitional adjustments (OECD, 2022; World Bank, 2023). For instance, Nordic countries like Sweden, Finland, and Norway have adopted comprehensive carbon taxes since the early 1990s, encompassing upstream and downstream oil and gas activities with varying rates and exemptions to balance environmental efficacy and economic viability (Andersen, 2019). Similarly, Canada's federal-provincial carbon pricing system imposes taxes on fuel combustion while providing output-based rebates and exemptions for trade-exposed oil and gas facilities, aiming to preserve comparative advantages in global markets (Metcalf & Weisbach,

2009; World Bank, 2023). In contrast, the European Union's Emissions Trading System (EU ETS) operates as a cap-and-trade framework, covering power generation, industrial processes, and aviation, key areas for oil and gas operations, while allocating free allowances to vulnerable installations to avert carbon leakage and support gradual decarbonisation.[1]

In contrast, major hydrocarbon-exporting economies such as the United States, Saudi Arabia, and China have avoided comprehensive national carbon taxes, opting instead for subnational initiatives, pilot programs, or alternative instruments like emissions trading systems (OECD, 2022; World Bank, 2023). This divergence underscores a broader pattern: no major economy fully exempts the oil and gas sector from carbon pricing, but most incorporate partial exemptions, border adjustments, or revenue recycling to address regressivity and distributional concerns (OECD, 2022).

In case of Qatar, implementing a hybrid carbon tax framework that combines both upstream and downstream components would ensure comprehensive emissions coverage across the entire energy value chain. An upstream carbon tax, applied at the point of fossil fuel extraction or processing, would internalise the environmental cost of production, while a downstream component, levied at the point of fuel consumption, would encourage energy efficiency and behavioural change among end-users. Gradually introducing such an integrated approach, starting with modest tax rates that increase predictably over time, could generate stable fiscal revenues for reinvestment in renewable energy, carbon capture and storage (CCS), and energy-efficiency initiatives, while reducing fiscal dependence on volatile hydrocarbon revenues (World Bank, 2023).

Under this proposed policy approach, a broad-based and integrated carbon tax would enhance Qatar’s long-term industrial efficiency by incentivising energy-intensive sectors to adopt solar energy, hydrogen technologies, and advanced battery storage systems. The resulting improvements in innovation capacity and energy productivity would not only lower production costs but also accelerate the transition toward a diversified and low-carbon economy. Therefore, a well-calibrated upstream–downstream carbon pricing mechanism could act as a catalyst for structural transformation, encouraging the oil and gas sector to invest in decarbonisation technologies and cleaner production methods. This approach would also strengthen Qatar’s global competitiveness and reinforce its leadership in sustainable energy development within the region.

To maximise the environmental and socioeconomic benefits of carbon taxation, revenue-neutral recycling mechanisms should accompany its implementation. Redirecting carbon tax revenues toward household rebates, subsidies for low-carbon technologies, and green infrastructure would offset any regressive distributional impacts while stimulating non-hydrocarbon sectors. Such measures would promote inclusive and resilient economic growth, align fiscal policy with sustainable development objectives, and position Qatar at the forefront of the GCC in adopting innovative carbon-pricing strategies (OECD, 2022; World Bank, 2023).

[1] See European Commission, ‘EU emissions trading system (EU ETS)’, https://eur-lex.europa.eu/EN/legal-content/summary/eu-emissions-trading-system.html.

5. CONCLUSION AND POLICY RECOMMENDATIONS

This study has examined the role of carbon taxes as a pivotal instrument for advancing environmental development in Qatar, a hydrocarbon-dependent economy grappling with high per capita GHG emissions and fiscal vulnerabilities. Drawing on international practices and a comprehensive SWOT analysis, the article highlights how carbon pricing mechanisms can internalise negative externalities, incentivise cleaner production, and contribute to sustainable development goals, such as SDG 7 and SDG 13. The analysis reveals that Qatar's elevated CO_2 emissions, predominantly from the oil and gas, power, and transport sectors, necessitate targeted fiscal reforms, while the low tax-to-revenue ratio (averaging 11.3% from 2020-2025) emphasises the potential for carbon taxes to diversify government revenues and achieve a 'double dividend' of environmental protection and economic resilience.

The SWOT framework underscores key strengths, including emissions reductions, innovation in clean technologies, and revenue recycling to alleviate burdens on labour and capital, as evidenced by successful implementations in OECD countries. However, weaknesses such as regressivity and implementation uncertainties should be mitigated through well-designed progressive measures, including targeted rebates for low-income households and the gradual phasing in of tax rate increases. Opportunities lie in funding green initiatives, enhancing environmental awareness, and integrating carbon pricing with Qatar's National Climate Change Action Plan, while threats, ranging from political resistance to CBAM complexities, can be mitigated via robust data collection, stakeholder consultations, and hybrid upstream–downstream approaches.

To realise these benefits, Qatar should adopt an integrated upstream–downstream carbon tax framework, starting with modest rates on extraction and processing (upstream) to capture emissions at the source, complemented by consumption-based levies (downstream) to promote energy efficiency among end-users. This hybrid model, informed by global precedents like the EU ETS and Nordic systems, would ensure comprehensive coverage of high-emission sectors, generate stable revenues for reinvestment in renewables, CCS, and sustainable infrastructure, and safeguard competitiveness through border adjustments and exemptions for trade-exposed industries.

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