

FISCAL POLICY FRAMEWORK IN A DECARBONIZED FUTURE FOR RESOURCE-RICH COUNTRIES

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***Abstract:** In a world transitioning towards decarbonization, resource-rich countries (RRCs) face unique challenges in shaping their fiscal policy frameworks, necessitating significant adjustments. This paper analyzes the effects of decarbonization on the fiscal policies of RRCs, focusing on the intersection of fiscal sustainability and sustainable development goals. The key findings reveal that effective fiscal discipline is crucial for maintaining fiscal sustainability amid fluctuating resource revenues. Implementing medium-term budget frameworks helps RRCs manage economic volatility and plan for long-term fiscal health. The adoption of green fiscal policies can support RRCs in navigating the challenges of decarbonization, contributing to both fiscal sustainability and sustainable development goals. Additionally, decarbonization affects various economic aspects, including budget revenues, expenditures, and the overall fiscal sustainability landscape, necessitating tailored fiscal policies. This comprehensive analysis provides valuable insights into designing and implementing fiscal policies suited to the needs of resource-rich countries during the global energy transition. The study highlights how green fiscal policies can assist RRCs in managing decarbonization challenges while achieving sustainable development goals.*

***Keywords:** decarbonization, fiscal policy, resource-rich countries, public finance, green fiscal policies.*

INTRODUCTION

Achieving the target of keeping global temperature increases below 2°C, ideally stay within a 1.5°C limit, requires a profound transformation across various sectors, including energy, industry, transportation, and agriculture. This urgent need for action was emphasized with the adoption of the Paris Agreement in December 2015, indicating a collective global effort to address climate change. However, international efforts to combat climate change remain mainly insufficient, and pose fiscal risks on public finances. The global temperature levels are expected to increase by more than 1.5°C above pre-industrial levels over the next five years, according to the latest data from the World Meteorological Organization (WMO, 2023). According to the "Global Risks-2024" report of the Davos Economic Forum published in January of 2024, "Extreme weather events", "Loss of biodiversity and destruction of the ecosystem" and "Lack of natural resources" are among the main risks in the long term (World Economic Forum, 2024). These risks emphasize the critical necessity for coordinated global efforts to tackle climate change and its related impacts.

Furthermore, fossil fuels, including crude oil, natural gas, and coal are the primary source of anthropogenic greenhouse gas emissions, and continue to dominate global energy supply. The resource-rich countries are the major contributors to global emissions on a per capita basis due to extraction, processing, and exports, and sometimes inefficient energy systems used by industry and housing. These countries as a whole represent almost 30.0 percent of the global population, 15.0 percent of world’s gross domestic product, and 20.0 percent of global greenhouse gas emissions. Even a 50 percent probability of limiting warming to 1.5°C, nearly 60 percent of proven reserves for oil and natural gas and 90 percent for coal must remain unextracted (Welsby, et al., 2021). Considering the decarbonization is important, resource-rich countries face unique challenges on designing their fiscal policy frameworks, requiring significant adjustments. During the 2017-22 period, the net export of fossil fuels on average represented a significant portion of GDP in various countries: 40.3 percent in Libya, 39.2 percent in Equatorial Guinea, 37.3 percent in Qatar, 36.0 percent in Kuwait, and 35.5 percent in Azerbaijan (Figure 1).

Figure 1.

Net export of fossil fuels (percent of GDP) by fossil fuel producer (Average 2017-2022)

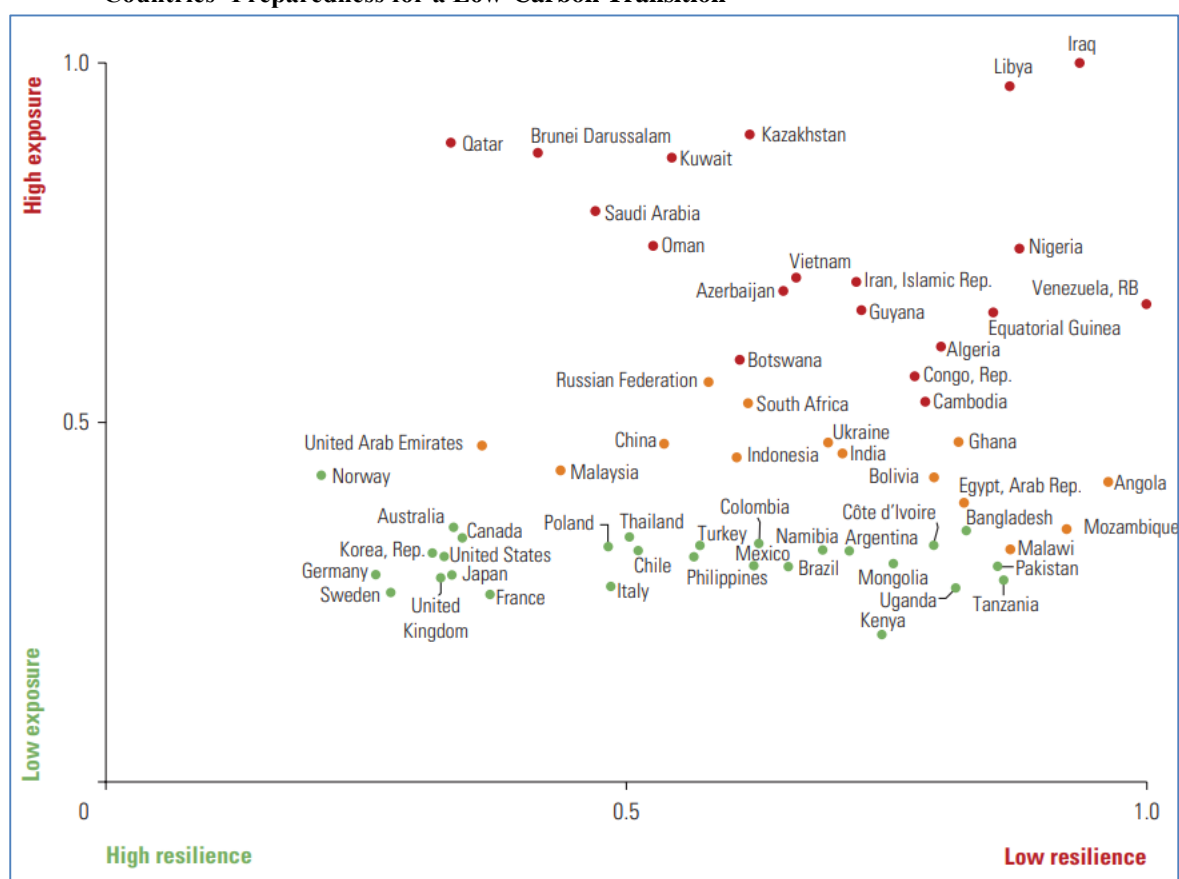
Rank	Country	All Fuels	Crude Oil	Natural Gas	Coal
1	Libya	40,3	35,2	5,2	-0,01
2	Equatorial Guinea	39,2	28,1	11,1	0,00
3	Qatar	37,3	13,0	24,3	-0,01
4	Kuwait	36,0	33,5	2,5	-0,03
5	Azerbaijan	35,5	28,7	6,7	0,00
6	Angola	34,9	32,2	2,7	-0,01
7	Iraq	33,2	33,7	-0,4	-0,01
8	Brunei Darussalam	32,9	10,6	22,7	-0,49
9	United Arab Emirates	32,6	29,1	3,5	-0,04
10	South Sudan	31,1	31,1	0,0	0,00
11	Republic of Congo	30,6	30,5	0,2	-0,09
12	Oman	23,1	16,6	6,6	-0,03
13	Saudi Arabia	22,1	21,4	0,7	-0,01
14	Gabon	20,7	20,5	0,2	-0,02
15	Algeria	20,3	10,2	10,1	-0,06
16	Kazakhstan	19,1	17,9	1,1	0,11
17	Norway	18,1	7,9	10,1	-0,06
18	Mongolia	14,8	-5,8	-0,2	22,5
19	Turkmenistan	14,3	1,6	12,4	0,20
20	Chad	14,1	14,1	0,0	0,00
21	Venezuela	13,2	13,2	-0,1	0,03
22	Trinidad and Tobago	13,0	3,2	10,0	-0,08
23	Russian Federation	12,3	10,5	0,6	1,12
24	Papua New Guinea	12,1	2,1	10,0	0,00
25	Iran	11,9	10,3	1,5	0,02
26	Bahrain	9,5	8,9	N/A	0,00
27	Nigeria	8,7	7,1	1,6	0,00
28	Ghana	5,8	5,8	0,0	-0,04
29	Colombia	5,6	3,4	-0,1	2,30
30	Canada	4,1	3,2	0,5	0,30

Sources: IMF, World Economic Outlook database; UNCTAD; IMF staff calculations.

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In Angola, the net export of fossil fuels represented 34.9 percent of GDP in 2017-2022. Moving forward, countries like Iraq, Brunei, the United Arab Emirates, South Sudan, and Congo was estimated to have more than 30 percent of GDP from fossil fuel exports during the same period. In addition, the World Bank analyzes countries' preparedness levels for a low-carbon transition using a composite indicator. (Figure 2). The Gulf countries and Russia are on the borderline, frequently facing similar levels of exposure but enjoying greater resilience due to the complexity of their economies. This indicator highlights the more vulnerable RRCs that have not yet diversified their economy towards low-carbon growth. These RRCs are small oil-gas producers in Middle East, the North Africa, sub-Saharan Africa, and Latin America (Peszko, and Grzegorz, 2020). In addition, poverty and ongoing conflicts are among the most significant challenges making countries more vulnerable to climate change.

Figure 2.
Countries' Preparedness for a Low-Carbon Transition



Source: Diversification and Cooperation in a Decarbonizing World (World Bank, 2020, p.57)

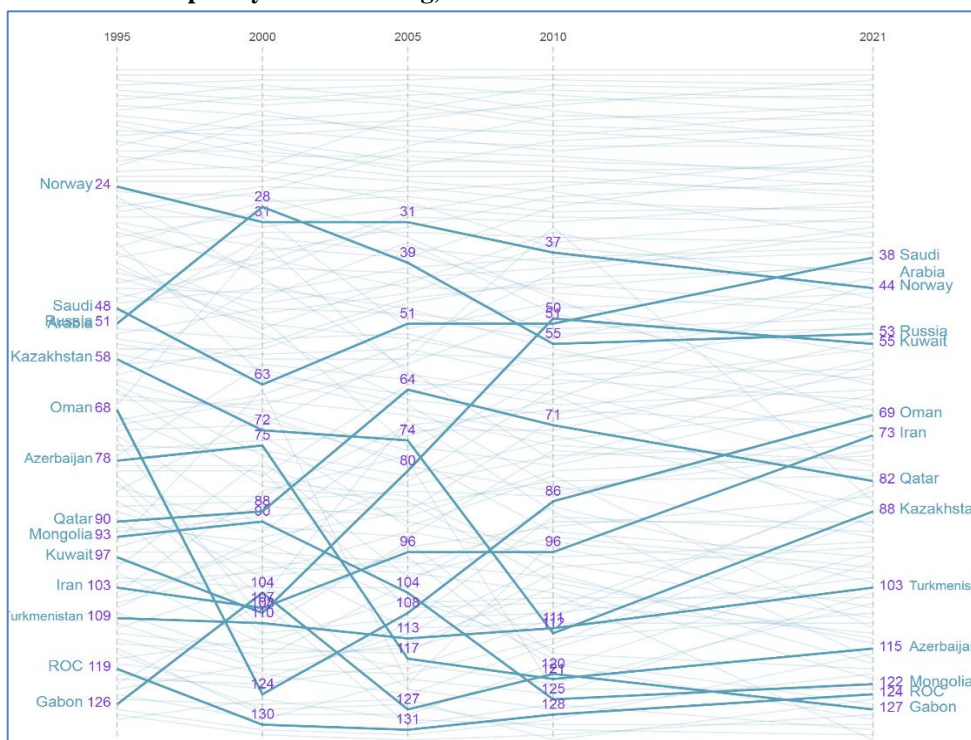
The least prepared countries, such as Iraq and Libya, are particularly vulnerable to external shocks from the decarbonization process, due to long-term conflicts have destroyed all non-oil tradable industries and already weak institutions. Due to their poor governance, Equatorial Guinea, Nigeria, and the Venezuela are the least resilient and most exposed countries. Azerbaijan, Botswana, and Kazakhstan share high exposure and relatively weak resilience. On the other hand, Norway is well-equipped for decarbonization due to its resilience, particularly its diversity, economic flexibility, and high quality of human capital and

institutions. In contrast, some less prepared countries, like Angola, are less exposed than Norway.

Another significant determinant of the resilience for resource-rich countries to decarbonization is their complexity and economic performance. Countries with high levels of economic complexity, high-income growth are better prepared to new capacities in anticipation of decline in demands for fossil fuels and carbon-intensive products and services.

The Economic Complexity Index (ECI) measures the diversity and prevalence of a country's exports. ECI scores show that Mongolia, Venezuela, Nigeria, and Congo perform particularly poorly and may struggle to create new capabilities in their economies compared to other RRCs. Russia and Kuwait, ranking 53rd and 55th respectively, are good performers in the ECI index among the RRCs out of 133 countries listed in the Harvard Atlas of Economic Complexity. Interestingly, Saudi Arabia, ranked 38th, holds a better position than Norway, which remains at 44th place. The low-ranking countries show potential challenges in diversification and innovation, indicating lower resilience to decarbonization compared to other RRCs. Gabon, the Republic of Congo, Mongolia, and Azerbaijan have low ECI scores. This low ranking suggests that these RRCs may face challenges in adapting to the decarbonization process due to their fossil fuel-focused economies.

Figure 3.
Economic Complexity Index ranking, 1995-2021



Source: The growth Lab at Harvard University 2021

Uncertainties related policy actions in the rest of the world, consumption choices in developing countries, and technological advancements complicate decision-making for the resource-rich countries when establishing a comprehensive strategy. Robust transition risk management strategies towards sustainable growth calls for RRCs to implement two main strategies.

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Historically, diversification efforts in resource-rich countries have traditionally focused on shifting down the value chain towards energy-intensive and polluting industries. This involves diversifying outputs and exports through energy or carbon-intensive industrialization related to fossil fuels. This approach has generated short-term export revenues and helped in managing volatility in energy prices. However, this approach has also heightened their dependency on carbon-intensive economic activities, thereby increasing their vulnerability to the global low-carbon transition.

Another pathway for diversification is to promote a more extensive diversification of wealth (assets), which can lead to the development of productive and competitive economies that are also adaptable and resilient in a decarbonizing world. This relies on knowledge and efficiency, which enhance productivity over time and diversify the portfolio of national assets (inputs), including natural capital and intangible assets such as knowledge, innovation, and institutions. Fossil fuel depended countries should diversify their portfolio to include a broader range of produced, human, and natural capital. This can be achieved by increasing investments in education and innovation, ecosystem services, and enhancing their social capital and institutional capacity.

This involves prioritizing investing in education sector and innovation to foster a proficient workforce able to stimulate diversified economic growth. Additionally, improving ecosystem services through restoration efforts can mitigate environmental decline while promoting sustainable development. Moreover, strengthening social capital and institutional capacity is crucial for fostering inclusive governance systems that enable efficient resource management and fair distribution of advantages. By collectively focusing on these aspects, fossil fuel-dependent countries can navigate the transition towards a more varied and sustainable future.

Additionally, diversification can occur through climate cooperation. Diversification alone is unlikely to trigger a low-carbon transition. Moreover, climate initiatives in net fuel-importing nations might result in what is known as "dirty" diversification, where emission-intensive industries relocate to resource-rich countries. In order to transition the global economy to a low-carbon model, resource-rich countries must implement domestic climate policies. These policies would aid in diversifying assets and promoting economic diversification, while also shielding RRCs from potential consequences such as border taxes or broader trade sanctions imposed by other nations due to insufficient climate policies. Nonetheless, these policies come with immediate risks, posing challenges for policymakers in terms of justification and implementation.

Possible remedies for this issue encompass innovative collaborative mechanisms, such as wellhead taxes and preferential trade agreements, or broader conditional financial and technology transfers. These strategies have the potential to encourage and streamline climate cooperation among resource-rich countries, facilitating a more comprehensive structural transition compared to a piecemeal, project-focused approach to climate finance.

For both of these strategies, RRCs will need to develop and implement plans that account for a just transition for affected communities particularly in the coal-dependent regions who will be the first affected by a low carbon transition, including through re-training, re-tooling and targeted social protection (International Labour Organization, 2015).

Fiscal Impact of Decarbonization and Climate Change

Managing the impact of decarbonization on fiscal sustainability will be one of the most serious concerns facing resource-rich countries in the future decades. Currently, the growing production of energy from renewable sources and the global expansion of electrification in both public and private transportation are anticipated to reduce the demand for commodities. As alternative technologies become more affordable and actions to address climate change intensify in accordance with the Paris Agreement, the demand for hydrocarbons is expected to decrease significantly. Renewable energy sources are expected to play a greater role in electricity production, and the transition to electromobility and increased reliance on electricity in various sectors will significantly reduce the demand for hydrocarbons. The International Renewable Energy Agency (IRENA) and the International Energy Agency (IEA) report that renewable energy has become more affordable than fossil fuels, and three-quarters of all new electricity production capacity is renewable globally (IRENA, 2024). Many countries are increasing the sale of electric vehicles while proposing a ban on the sale of diesel and gasoline vehicles in the relatively near future.

From a public finance perspective, uncertainty regarding future oil-gas demand poses major fiscal risks, as many countries rely on production and export of hydrocarbon resources. The fiscal consequences of decarbonization have a significant impact on countries' budget balances, resulting in decreasing fiscal income and increased public spending (Ossowski, Rolando & Havard Halland, 2016). To improve fiscal risk management in the face of such challenges, the RRCs must strengthen its fiscal strategy and tools.

The impact of decarbonization on hydrocarbon export revenues often translate into fluctuations in budget revenues derived from state-owned enterprises and private companies, both domestic and international. These revenues encompass dividends, royalties, production sharing, and tax payments, where applicable. The potential effects of decarbonization on public finance can occur in various ways.

Broad Tax Base and Spending Composition. Decarbonization effects on hydrocarbon revenues can lead to broader implications for the tax base and government expenditure. Apart from directly affecting the budget revenues, the changes can impact various aspects of taxation and public expenditure. For example, a decrease in hydrocarbon revenues might push governments to consider their spending priorities, potentially redistributing spendings. This reallocation could affect crucial sectors like infrastructure development, social welfare programs, or educational initiatives.

Moreover, the interaction between hydrocarbon revenues and government spending can impact economic stability and long-term viability. Governments may face challenges if excessively dependent on volatile hydrocarbon revenues to public finance essential services and infrastructure projects. A sudden decline in revenues could result in budget deficits, increased debt, all of which can hinder economic growth and social cohesion. In RRCs, a decrease in hydrocarbon revenues could precipitate economic downturns, unemployment, and social unrest, underscoring the link between hydrocarbon exports and broader macroeconomic stability.

Increasing Spending. The decarbonization might necessitate increased spending on certain areas. The process may lead to job losses and economic dislocation for workers in

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affected industries. To mitigate the social impacts of these changes, governments may need to expand spending on social safety nets and support programs. This could include unemployment benefits, job training programs, healthcare coverage, and assistance for displaced workers to transition to new employment opportunities.

As countries navigate the decarbonization, state-owned enterprises focuses on fossil fuel-related activities may face important challenges. In order to address these challenges, financial support may be required for SOEs in several key areas. This assistance focuses a lot of initiatives, such as investments in research to explore alternative energy sources, expansion into renewable energy initiatives, and the implementation of more sustainable business practices. Furthermore, allocating spending for infrastructure aimed at meeting environmental standards and helping the decarbonization to cleaner energy sources is important. Moreover, the applying of workforce transition projects and retraining initiatives is significant to aim employees impacted by the evolving landscape of the industry. In such case, targeted financial support serves as a cornerstone in empowering SOEs to navigate shifting market dynamics and contribute meaningfully to the achievning decarbonization goals.

Government Guarantees and Debt: When state-owned enterprises face financial challenges during the decarbonization process, governments might provide guarantees on their debt, either implicitly or explicitly. While the guarantes can give struggling SOEs stability, they also pose serious risks to public finances.

If the SOEs default or experience financial trouble, the responsibility of the guarantes falls on the public finance. This could lead to high levels of public debt. In addition, implicit guarantees, even if not officially stated, can create market distortions among state-owned enterprises.

In order to mitigate these risks, governments need to evaluate the financial health of the SOEs receiving guarantees and set clear standards for providing such support. Transparency and accountability in managing public finances are crucial. To help minimizing the impact on government finances while facilitating a smooth transition to a sustainable economy is important.

Decarbonization and the Role of Fiscal Policy Framework

Maintaining fiscal discipline to ensure macroeconomic stability may become even more challenging in a decarbonized future. The global decarbonization could affect various aspects of resource-rich countries' economies, including hydrocarbon export incomes and investments, which directly affect budget revenues, as well as the hydrocarbon industry, with its spillover effects on other sectors of the economy. Additionally, decarbonization may have implications for inflation rates and the stability of the financial sector.

Consequently, it is important to prioritize fiscal discipline measures in upcoming period. Experience during previous oil price drops have shown that policy responses are typically procyclical by necessity, with reductions in public expenditure that can hinder long-term growth (IMF, 2015).

The procyclical fiscal policy may drive inflation and weaken competitiveness during periods of high revenues, while conversely leading to economic downturns when budget revenues decrease and decreasing spending are important to uphold fiscal sustainability. Many

commodity exporters revise or recalibrate their fiscal rules during the collapse in commodity prices. Looking ahead, the prospect of permanently reduced fossil fuel revenues may raise concerns regarding the government's capacity to sustain specific levels of public infrastructure, wage expenditures, social welfare programs, and more broadly, debt sustainability, and balance sheet vulnerabilities. The fiscal policy should be tailored to particular circumstances of each country. Implementing a medium-term fiscal framework supported by fiscal rules is crucial in this regard.

Decarbonization affects the fiscal policies of RRCs, particularly regarding the alignment of fiscal sustainability with sustainable development goals. An assessment of the importance of fiscal discipline, medium-term budget frameworks, and green fiscal policies in guiding RRCs toward a decarbonized path.

Furthermore, potential impacts of decarbonization on different sectors of the economy, including budget revenues, expenditures, and overall fiscal sustainability are important for implementing fiscal policies tailored to the needs of resource-rich nations amidst the global energy transition. Additionally, adoption of green fiscal policies can help these countries address the challenges of decarbonization while advancing their sustainable development goals.

By exploring the connection between fiscal resilience and decarbonization, strong and credible fiscal frameworks are crucial for resource-rich countries as they navigate the transition towards a greener and more sustainable future.

Stabilising public finance by establishing realistic fiscal targets will accelerate green growth. Without fiscal sustainability, achieving the sustainable development goals during future decarbonization is not achievable. Next-generation fiscal rules should be designed and aimed to strike a better balance between sustainability and flexibility, as well as decarbonization goals. The immediate action should focus on achieving sustainable fiscal targets, such as the non-resource fiscal balance as a share of non-resource GDP, and identifying the sources of financing to smooth the transition process, where possible.

The fiscal rule targets should consider not only short-term constraints, such as the size of the financing gap, but also longer-term objectives. Resource-rich countries are different, encompassing both high and low-income countries, as well as a range of fiscal positions. The determination of the fiscal rule targets will depend on country-specific elements, including the volatility on hydrocarbon revenues, the adequacy of reserves and fiscal space accordance with fiscal sustainability. To ensure the credibility of fiscal policy, the fiscal rule should integrate well-designed escape clauses for deviations in extraordinary circumstances.

The RRCs can achieve climate goals by maintaining fiscal discipline and implementing green fiscal policy. "Green fiscal policy" encompasses expenditure, revenue, and borrowing policies to promote the government's sustainable development objectives, utilizing fiscal policy tools to achieve environmental and climate-related targets. The climate change initiatives can be directly associated with fiscal policy, mainly through government spending or taxation, and they also have an indirect effect on macroeconomic and fiscal outcomes. On the expenditure side, green public investment, subsidies and transfers focused on climate-related initiatives play a key role at facilitating the decarbonization by promotion of clean energy, encouraging innovation in green technologies, and improving energy efficiency.

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By employing fiscal instruments for environmental objectives, it becomes possible to positively impact price signals and market incentives, thereby directing consumers, producers, and investors towards more sustainable decisions. In terms of revenue generation, significant climate policies, such as the emissions trading system (ETS), carbon taxes, and other environmental taxes (for example, excise taxes on fossil fuels), directly or indirectly establish a price for carbon emissions. Economic theory emphasizes that carbon pricing should be main aspect of effective climate change policy (Raúl Delgado & Huáscar Eguino).

The resource-rich countries should work to align their economies with the goals of the Paris Agreement. To meet the targets, identifying and sharing best practices and common approaches, building expertise, and benefiting RRCs is important. Under this approach, identifying, assessing, and reducing government fiscal risks arising from climate change and decarbonization, and using macroeconomic analysis to integrate climate considerations into fiscal policy, is crucial (OECD, 2020). Additionally, reducing fiscal risks arising from decarbonization and integrating climate into macro-fiscal policy and management for a sustainable and green recovery is essential (Mr. Luc Eyraud, et al, 2023).

Efforts to mitigate and adapt to climate change will have major economic consequences and will affect the fiscal sustainability of government budgets in the medium and long terms. Supporting the development of methods for identifying and managing fiscal risks from decarbonization impacts and the effects of efforts to mitigate them by reducing greenhouse gas emissions is imperative. Using green budgeting, green procurement, and climate-informed public investment management to integrate climate considerations into policymaking and budgeting and drive effective and equitable climate action that can deliver climate policy goals (Coalition of Finance Ministers for Climate Action , 2022).

Around the world, reforms are being carried out in accordance with the demands of the decarbonization, particularly in the field of tax legislation. Important steps are being taken in the direction of attracting green investments and supporting "green financing" initiatives. Implementing green fiscal policies, such as reducing subsidies and using tools like carbon taxes, will be critical to advance any country's decarbonization program.

"Carbon tax" is a payment levied on the volume of carbon emissions in order to ensure the reduction of relevant carbon-based emissions in the atmosphere. Oil products, natural gas, and coal are charged according to their carbon content. The implementation of the carbon tax aims to attract additional funds to revive the economy and bring it to a higher ecological level, while reducing the volume of GHG emissions (Asian Development Bank, 2023). The main goal here is to encourage enterprises to decrease GHG emissions and invest in the application of modern technologies along with paying for environmental damage. This, in turn, is called the "polluter pays" principle. In this case, the damage that may be caused to nature as a result of production activity is compensated.

Environmental tax reforms (such as those carbon taxes) have multiple benefits beyond climate. Carbon taxes can support multiple Sustainable Development Goals (SDGs) in various ways. Firstly, carbon taxes absolutely increase the price of fossil fuels, thereby reducing fossil fuel consumption and aiding in achieving climate goals. Secondly, as a source of tax revenue, carbon taxes can increase budgetary revenues, which can then be utilized for development purposes, such as enhancing spending on health, education, and welfare (UN, 2023).

Carbon taxes can serve as economic incentives for innovation by stimulating the development of green technologies and sustainable practices. Additionally, they encourage businesses to invest in research and development for low-carbon solutions.

Furthermore, carbon taxes can generate revenue for sustainability, such as providing funds for environmental initiatives and renewable energy projects, thereby addressing the dual goals of emission reduction and funding sustainable programs.

Beyond all the advantages mentioned above, there are also disadvantages of carbon taxation. One such disadvantage is its regressive impact on lower-income individuals. There is a risk that carbon taxes may disproportionately affect lower-income individuals, as they often spend a higher percentage of their income on carbon-intensive goods and services. Additionally, competitiveness concerns for industries are a significant issue. Industries subject to carbon taxes may face higher production costs, potentially leading to concerns about competitiveness and the possibility of carbon leakage, where industries relocate to regions with less stringent regulations. Furthermore, considering the complexity of implementation, carbon taxation can be challenging. Designing and implementing an effective carbon tax system requires careful consideration and monitoring to determine the appropriate tax rate and address potential loopholes. Additionally, incomplete coverage and sectoral exemptions can also be disadvantages. The effectiveness of carbon taxes may be compromised if they do not cover all sectors or if certain industries are granted exemptions, potentially limiting their overall impact on emissions reduction.

DISCUSSION/CONCLUSION

As countries transition towards decarbonization, policymakers will need to carefully balance environmental goals with economic considerations. Assisting in mobilizing the financial resources to implement national climate action plans in RRCs, climate budgeting applications, as well as addressing climate risks and vulnerabilities is important to ensure climate resilience. The RRCs can achieve climate goals by maintaining fiscal discipline and implementing green fiscal policy.

The transition to sustainable development requires funding beyond governments' financial capacity. Public finances are important in spurring private investment consistent with climate goals. Stabilising public finance by establishing realistic fiscal targets will accelerate green growth. Without fiscal sustainability, achieving the sustainable development goals during future decarbonization is not achievable. Implementing carbon pricing mechanism and investing in renewable energy can help mitigate the economic impacts of decarbonization. Investing in climate initiatives not only brings about climate benefits such as helping achieve Nationally Determined Contributions (NDCs) and mitigating climate-related risks, migration, and disease but also environmental benefits, including cleaner air and water quality, and safer and less congested roads.

Governments can promote the use of green bonds by leveraging the growing interest of capital markets in sustainable projects. In addition, ministries of finance can support the development of fiscal policy framework with their implementation of carbon taxes. Moreover, fostering global cooperation and partnerships will be essential to address worldwide challenges related climate change. Governments might also necessitate to provide targeted support and

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incentives for industries and communities heavily reliant on fossil fuels to facilitate a just transition. In addition, to facilitate the process, it is important to ensure macroeconomic stability and improve governance and the business climate. This involves planning public investments, and structural reforms to facilitate private investment. Overall, specific and coordinated efforts will be important to ensure sustainable and a smooth transition to a decarbonized future.

While this study provides a comprehensive analysis, one of its strengths is its detailed exploration of fiscal policies tailored to RRCs. However, a potential weakness is the variability of regional contexts, which may limit the generalizability of the findings. Additionally, further research is needed to explore alternative explanations and practical implications of fiscal policies in different economic and political environments.

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