TWN Climate Change Series 6

Economic Diversification from Oil Dependency: Practice and Lessons from Persian Gulf Oil-Dependent Developing Countries

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1 Introduction

DEVELOPING countries have consistently stressed the primacy of and need to address and promote their sustainable development options and policy space in the multilateral climate regime. Doing so requires, among others, reflecting the principle of "common but differentiated responsibilities" (CBDR) with respect to reductions in greenhouse gas emissions (including for developed countries to fully implement their commitments in this area) and the implementation of existing commitments on finance and technology transfer to developing countries.

Developing countries have called for development policy space, choices, and flexibilities. This means that international commitments and domestic policies should address in a flexible manner the unique set of development and environmental circumstances of each developing country while supporting a shift to cleaner, less carbon-intensive, and more equitable and sustainable production and consumption patterns in developing countries. Supply-side productive capacity should be increased through financing support to acquire technologies and modernize production in developing countries. Technical assistance and capacity building are needed, especially in terms of research and development, design and production, and infrastructure development.

In this context, the principle of equity is critical to serve as the basis for dealing with competing interests, especially between developed and developing countries, in the global trade and environment (including climate change) regimes.

In multilateral policy negotiating fora such as in the UN Framework Convention on Climate Change (UNFCCC) and the World Trade Organization (WTO), these issues of sustainable development, policy space, and the challenges around implementing a sustainable low-carbon, climate-resilient development pathway are very sensitive. Developing countries are often concerned that responses to addressing climate change and reducing greenhouse gas emissions on an economy-wide scale could adversely impact their economic and social development.

In the last decade, sustained economic diversification and transformation in developing countries has been recognized as a proactive way of addressing the economic and social consequences of climate change response measures that may be undertaken by countries as part of their implementation of the UNFCCC and its Paris Agreement. There has been an increasing focus on elaborating the technical work on economic diversification and transformation in the context of sustainable development and the post-2030 development agenda.

Defining economic diversification

Economic diversification is the process of shifting an economy away from a single income source towards multiple sources from a growing range of sectors and markets. Traditionally, it has been applied as a strategy to encourage positive economic growth and development. In the context of climate change adaptation, it takes on a new relevance as a strategy to diversify away from vulnerable products, markets, and jobs towards income sources that are low-emission and more climate-resilient.

Source: UNFCCC, Economic diversification, at https://unfccc.int/topics/resilience/resources/economic-diversification

2 Understanding the Context for Economic Diversification: Addressing the Economic and Social Consequences of Climate Change Response Measures

A. Climate change response measures and their economic and social consequences

1. Understanding response measures

CLIMATE change response measures are the actions that countries take to combat climate change at the global, regional, and national levels. These include measures for the protection and stabilization of the climate, emissions leakages and/or the costs of environmental compliance. They may have unintended and adverse economic and social consequences for developing countries' economies, most often on the poorest and most vulnerable sectors of those economies.

A variety of response measures are already being implemented by developed countries. But there has not yet been any systematic global or national assessment and analysis of the impact of such measures on developing countries. In this context, the key question is which measures promote (or at least do not prevent) sustainable development.

Response measures are multidimensional. Some are local, such as adaptation measures for infrastructure. Others, such as trade-related and energy measures, may have multilateral impacts. Response measures with multilateral impacts should be assessed multilaterally before deployment. While many response measures can be justified in terms of mitigation/adaptation, their economic and social impacts can obstruct sustainable development, particularly in developing countries, and thus unduly restrict more global participation in combating climate change. For each specific

response measure, there can be a variety of implementation approaches, including transition periods, exemptions, a sliding scale based on income, or compensation.

Additionally, national response measures often have multiple co-impacts, aside from facilitating climate change-related actions. They can be used to protect old domestic industries or to build new economic sectors. The rapid introduction of new sectors and products that expand the use of clean energy and improve efficiency is in both the national and global interest. But their rapid propagation could be hindered by response measures that obstruct development of the same sectors by other countries. For example, when strong intellectual property protections prevent adaptive activities and reverse engineering or when the prices of goods incorporating the new technology are subsidized in the same way that agricultural products from developed countries are today.

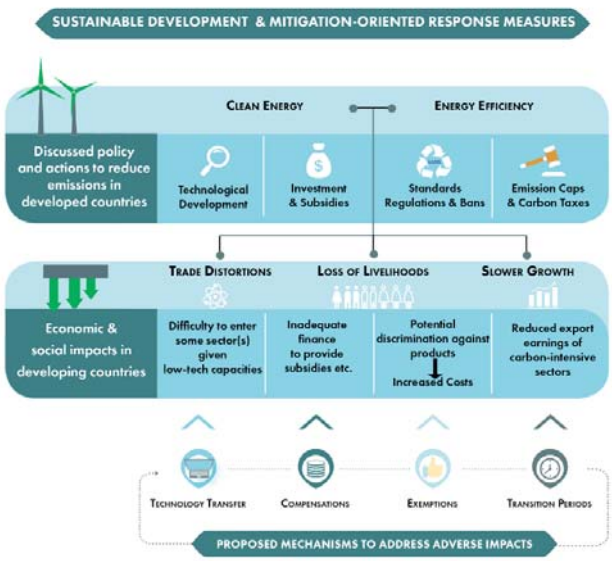
In climate change mitigation, there are two areas of particular importance. The first is the transformation of energy supply, including the shift to renewable energy. The second is improving energy efficiency. At the basic level, mitigation-oriented response measures are economic policies. They include, for example, technological development; investment and subsidies in cleaner technologies; standards, regulations, and product bans; emission caps; and carbon taxation.

These mitigation-oriented response measures affect the sectors in which developing countries currently enjoy competitive advantage through trade outcomes, employment outcomes and financing flows. One example is tourism, which will be adversely affected by carbon-based fees on airline tickets. Some developing countries that have benefited from exporting products to other countries as intermediate inputs to the final product could be adversely affected by levies on bunker fuels that could increase transportation costs. These adverse effects in areas of competitive advantage for developing countries could directly impact livelihoods and employment and decrease the resources available for developing countries to invest in new sectors and economic diversification.

Because climate change-related sectors often are located at the current technological frontier, response measures which privilege enterprises – both

private and public – in developed countries can kick away the ladder on which developing countries can improve their domestic productivity and incomes and participate in the global mitigation effort.

There is a hierarchy of response measures in terms of their positive impacts. For example, the positive impact of domestic subsidies for clean technology development is the emergence of new, cleaner technologies. However, developing countries wanting to enter the same sector may be prevented from doing so by the strong enforcement of intellectual property rights or by having fewer fiscal resources to provide subsidies for technology development.



Source: M Khor, MF Montes, M Williams and VP Yu III, Promoting Sustainable Development by Addressing the Impacts of Climate Change Response Measures on Developing Countries (South Centre Research Paper 81, November 2017), p.6, at https://www.southcentre.int/wp-content/uploads/2017/11/RP81_Promoting-Sustainable-Development-by-Addressing-the-Impacts-of-Climate-Change-Response-Measures-on-Developing-Countries_EN.pdf

Response measures such as standards and eco-labelling can lead to trade distortions that may disadvantage developing countries whose manufacturers may not be able to meet such standards or qualify for eco-labels due to technological or capacity gaps. Such response measures should be compliant with WTO disciplines with respect to non-discrimination. This is particularly important given that, in the setting of internationally agreed standards, developing country governments and experts tend to be poorly represented in the committees designing them.

Other response measures such as carbon taxes and emission cap policies seek to restrict the production and use of products that emit greenhouse gases.

In the case of carbon taxes, this response measure affords higher fiscal revenues to the state, which can be used to reduce other taxes and applied to environmental, developmental, and social objectives. They could have an impact on the export earnings of countries dependent on tourism and commodity and agricultural exports, thereby limiting these countries' ability to transform and diversify their economies through investment. For example, if suddenly or incorrectly applied in developing countries without commensurate corollary policy measures to avert or minimize any adverse economic or social consequences on the poor, carbon taxes could increase inequality by making the cost of access to modern energy sources prohibitive. This could have the impact of increasing poverty and heightening energy inequity.

The Glasgow Climate Pact from the 26th session of the Conference of the Parties to the UNFCCC (COP26) in 2021 recognized that limiting global warming to 1.5ºC requires rapid, deep and sustained reductions in global greenhouse gas emissions, including reducing global carbon dioxide emissions by 45% by 2030 relative to the 2010 level and to net zero around mid-century, as well as deep reductions in other greenhouse gases, and that this requires accelerated action in this critical decade, on the basis of the best available scientific knowledge and equity, reflecting common but differentiated responsibilities and respective capabilities, in the light of different national circumstances and in the context of sustainable development and efforts to eradicate poverty.[1]

This is supported by a call for governments to accelerate the development, deployment and dissemination of technologies, and the adoption of policies, to transition towards low-emission energy systems, including by rapidly scaling up the deployment of clean power generation and energy efficiency measures, including accelerating efforts towards the phasedown of unabated coal power and phase-out of inefficient fossil fuel subsidies, while providing targeted support to the poorest and most vulnerable in line with national circumstances and recognizing the need for support towards a just transition.[2]

To operationalize this, a work programme was established under the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA) to urgently scale up mitigation ambition and

implementation in this critical decade;[3] governments were urged to communicate new or updated nationally determined contributions (NDCs) in 2022,[4] requested to revisit and strengthen the 2030 targets in their NDCs as necessary to align with the Paris Agreement temperature goal by the end of 2022, taking into account different national circumstances,[5] and, if they have not done so, to communicate their long-term low greenhouse gas emission development strategies towards just transitions to net zero emissions by or around mid-century, taking into account different national circumstances.[6] There would also be an annual high-level ministerial round table on pre-2030 ambition beginning at COP27 in 2022,[7] for which the secretariat would annually update its synthesis report on NDCs[8] and prepare a synthesis report on long-term low greenhouse gas emission development strategies.[9]

All of these actions are designed to increase the policy pressure on governments, but particularly on developing countries that are big aggregate emitters, to increase the scope and extent of their mitigation actions under the Paris Agreement by shifting their economies as soon as possible from using fossil fuels.[10] It is likely that even as they insist that their own NDCs are sufficiently ambitious, developed countries will seek to use the pre-2030 mitigation work programme as the means through which more political pressure would be exerted on developing countries, especially those that have large aggregate emissions, to continually update their NDCs. This would completely turn the principle of common but differentiated responsibilities around, with those who caused the problem historically now pushing those who bore the least responsibility for global warming to be the ones to do more to address it.

2. Case study: Trade policy as fossil fuel demand-side response measure

This policy-driven pressure to reduce demand and shift away from fossil fuels, in particular oil and coal, as a response measure to climate change is driving both technology and policy shifts with respect to energy and economics. For example, some clear examples of climate change-related response measures include recent initiatives at the WTO from some developed countries to use trade measures to respond to climate change.

In the run-up to the 12th WTO Ministerial Conference (MC12) in June 2022, developed countries were inviting many developing countries to sign up to Joint Statement Initiatives (JSIs) that could then be highlighted as part of the outcomes of MC12. These JSIs are similar in terms of intent to the joint declarations and statements that were entered into by various states, international organizations, and private sector organizations in the run-up to and during COP26 in Glasgow and which had been encouraged by the UK COP26 Presidency.[11]

In the WTO context, these JSIs are seen by their proponents (particularly from developed countries) as a means of making trade and environment mutually supportive or as the WTO Members' trade-related policy responses to fighting climate change. These JSIs include the following:[12]

- Trade and environmental sustainability structured discussions (TESSD) – 50 WTO Members (including Member states from the European Union) in November 2020 proposed organizing informal structured discussions on trade and environmental sustainability, and aimed to have a joint ministerial statement at MC12 that would set out future work for the initiative in areas such as trade and climate change as well as fix a road map for advancing discussions in 2022
- Informal dialogue on plastics pollution and environmentally sustainable plastics trade – 14 participants agreed to dialogue on supporting efforts to reduce plastics pollution and promote sustainable plastics trade, including through transparency and international cooperation
- Japan's proposal on carbon neutrality – introduced at an Ottawa Group meeting in March 2021, this proposal pushed for discussions among interested WTO Members on [i] elimination of tariffs on products that contribute to reduction of greenhouse gas emissions, e.g., hydrogen-related products and storage batteries, [ii] rule-making on regulatory issues and on environmental services, and [iii] capacity building within developing countries
- Agreement on Climate Change, Trade, and Sustainability (ACCTS) – launched in September 2019, this initiative by six WTO Members aims to lower trade barriers to environmental goods and services, address fossil fuel subsidies, and establish guidelines for eco-labels; negotiations are ongoing.

In addition, plurilateral negotiations for an Environmental Goods Agreement (EGA),[13] including 18 participants (46 WTO Members) and launched in July 2014, have been suspended since 2017. The talks were intended to push forward a plurilateral agreement for the liberalization of environmental goods trade following the deadlock for over a decade in the multilaterally mandated negotiations on liberalization of environmental goods and services under paragraph 31(iii) of the WTO's Doha Ministerial Declaration.

Other WTO Members have also launched or are considering unilateral "climate-related" trade initiatives such as:[14]

- The EU Green Deal carbon border adjustment mechanism (CBAM)[15] – The EU updated WTO Members in November 2020 and March 2021 on its plans to establish a CBAM as part of its Green Deal framework, and issued its CBAM regulation proposal on 14 July 2021[16]
- The United States and Canada (both separately and jointly) and the UK G-7 Presidency have been discussing the potential use of CBAMs as part of "climate change action".[17]

It is important to note that developed country initiatives with respect to the linkages between trade, environment, and climate change usually focus on:

- Seeking to reduce the domestic demand for fossil fuels for energy and transportation through technological, regulatory, and trade policy changes that make the price of fossil fuels more expensive, reduce the consumption of fossil fuels, or shift to alternative fuels
- Securing and expanding markets for their environmental goods and services in developing countries
- Restricting developing countries' policy flexibility and space with respect to trade in environmental goods and services, with possible implications on constraining domestic environmental goods and services development
- Solidifying developed country production and export dominance in most environmental goods and services.

These initiatives tend to highlight the role of commercial trade as the primary mode for transfer and acquisition of climate-friendly technologies, with little or no reference to any technology transfer commitments that developed countries may have under the WTO or the UNFCCC.[18] They explicitly or

implicitly assume the enforcement of intellectual property rights over the traded environmental goods. These characteristics are evident in one way or another, for example, in the JSIs with respect to the TESSD, Japan's carbon neutrality proposal and the ACCTS, and in the plurilateral and unilateral initiatives such as the EGA and the EU CBAM regulation.

The commercial trade-based approach to the transfer and dissemination of climate change-related technologies may exacerbate inequalities between developed and developing countries. For example, there are existing inequalities between developed countries and the rest of the world with respect to the patent ownership of environment-related inventions and technologies (such as those on environmental management, water quality management, and climate change mitigation) and over technological innovations in general. A 2015 working paper from the Organisation for Economic Cooperation and Development (OECD), for example, shows that around 85% of all patents issued globally between 2000 and 2011 for environmental management, water quality, and climate mitigation inventions were issued in developed countries; and the disparity increases when looking at the extent to which developed countries in the OECD account for the patenting of inventions globally (at least 88%) and for "high-value" inventions (more than 90%).[19] In the period between 2012 and 2017, based on OECD statistics, around 86% of patent applications in environment-related technologies were filed in OECD countries.[20] This dominance in patenting environment-related technologies then gets translated into market dominance in the international trade of such technologies, with developed countries being the dominant exporters of such technologies (to each other and to developing countries).[21]

The accelerating pace and impacts of climate change and environmental degradation globally coupled with the push by developed countries in the UN climate change negotiations for stronger emission reduction targets, including by developing countries, could result in a rapid and substantial increase in global and developing country markets for environmental goods and services – a market that developed countries currently dominate. Their plurilateral and unilateral initiatives, if made into binding treaty obligations, could extend such dominance. Coupled with current systemic failures in terms of financing, technology transfer, terms of trade, debt, etc. that adversely affect developing countries, these current inequitable economic arrangements

could be further solidified and deepened by these initiatives and increase the difficulty for developing countries to diversify and develop their economies in a sustainable and equitable manner.

3. Case study: Fossil fuel supply-side measures as response measures

Climate change response measures can also be used to reduce or ultimately eliminate the extraction and production of fossil fuels such as oil, coal, or natural gas, to ultimately remove the primary source of anthropogenic greenhouse gas emissions. These fossil fuel supply-side measures can be defined as government actions which constrain the exploration,[22] extraction, production, transportation, transformation or supply of fossil fuels (including mines, wells, pipelines and export terminals)[23] as opposed to dealing with the demand side by seeking to reduce the consumption of fossil fuels (e.g., factories, coal/gas power plants etc.).[24]

Some examples of such fossil fuel supply-side response measures that, if applied, could constrain production and extraction of fossil fuels include the following:

- Carbon-based export tax on oil[25] or coal[26] – this would be a tax based on the carbon content of the energy product[27]
- Producer/wellhead (carbon) tax[28] – e.g., raising the royalty rate for fossil fuel production on publicly owned land from 12.5% (routine royalty charged by the US federal government) to 25% (as is charged on private land)[29]
- Carbon tax on fossil fuel producers proportionate to their emissions[30]/ Tax on fossil fuel capital or income from fossil fuel production[31]
- Reduction or removal of fossil fuel producer subsidies (subsidies are given in a variety of ways,[32] e.g., tax credits on exploration and production equipment/tax exemptions,[33] direct payments per output unit, sub-market-rate leasing of state-owned lands, tax exemptions or lower rates, services at below market rates and income or price support (above market prices for producers)[34] including on fossil fuel infrastructure)[35]
- Restricting government finance for fossil fuel projects, including via restrictions on export credit agency finance for fossil fuel extraction or infrastructure, and on pension/investment funds, as Ireland and Sweden have done and Norway is considering[36]

- Quotas on fossil fuel production (or export) rights[37]
- Restricting fossil fuel exports (quotas)[38]
- Mandatory offsetting (via emission reduction projects)[39]
- Restricting or banning fossil fuel reserves development (on private or public[40] lands)
- Public compensation for leaving fossil fuel assets in the ground (e.g., Ecuador's attempt in Yasuni National Park).[41] This could be funded via a tax on oil companies.[42]
- Carbon offset credits for leaving fossil fuel assets in the ground[43]
- Cap and trade for fossil fuel production/extraction rights[44]
- Regulation or ban/moratorium[45] on exploration, extraction[46] or transport (e.g., the Keystone XL pipeline[47]) of fossil fuels (or infrastructure (e.g., pipelines and coal terminals[48]) to do so)[49] or use of certain technologies[50] (e.g., banning gasoline or diesel-engine vehicles)[51]
- "[M]odification of legal criteria for coal mining permits to reflect considerations such as climate change, local ecology and human health"[52]
- Regulatory action to force corporate divestment[53] from fossil fuel production, or governments (including sovereign wealth funds[54]) themselves divesting[55]
- Extraction-based emissions accounting
- Regulatory or standards action for life-cycle-based accounting of embedded carbon in fossil fuels sold in the marketplace[56]
- Fossil fuel asset purchase and retirement
- Increasing royalties and other fees in connection with fossil fuel production on publicly owned lands
- Charging carbon "adders" – fees based on the marginal damages of carbon emissions (i.e., that reflect the external costs of greenhouse gas emissions)[57] – per unit of fossil fuel extracted or produced or based on carbon intensities
- Subsidies to support energy efficiency improvements in the fossil fuel production and supply chain
- Successful supply-side climate litigation (domestic court decisions to end fossil fuel extraction, e.g., in cases brought by civil society organizations)[58]
- Low-carbon fuel portfolio standards and requirements (e.g., by increasing the proportion of biofuels in fuel)[59]
- Mandating fossil fuel producers to do carbon sequestration, e.g., carbon capture and storage (e.g., using tradeable storage certificates).[60]

B. Responding to climate change and to climate change response measures through economic diversification

The UNFCCC has long recognized the importance of addressing the economic and social consequences of the implementation of climate change response measures undertaken by UNFCCC Parties. This can be traced to its Preamble, its principles,[61] the commitments of Parties thereunder,[62] and the work of the Subsidiary Body on Implementation (SBI).[63]

The UNFCCC requires Parties to take into full consideration, in the implementation of the commitments of the Convention, the specific needs and concerns of developing country Parties arising from the impact of the implementation of response measures. Discussions on how to address the economic and social consequences of the implementation of response measures have hence been a longstanding agenda item in both the SBI and the Conference of the Parties to the UNFCCC, with many conclusions and decisions having been taken by these bodies since the entry into force of the UNFCCC in 1994.[64]

Additionally, for those UNFCCC Parties which are also Parties to the Kyoto Protocol, they are committed under Articles 2.3 and 3.14 of the Kyoto Protocol to strive to minimize adverse economic, social, and environmental impacts on other Parties, especially developing country Parties, and those identified in Articles 4.8 and 4.9 of the Convention, taking into account Article 3 of the Convention.

Furthermore, the Paris Agreement and COP Decision 1/CP.21 (the decision to give effect to the Paris Agreement) reaffirmed the importance of response measures, further strengthened the responsibility of Parties to exercise care regarding the impacts of response measures and deepened the institutionalization of the work on the impact of the implementation of response measures in the UNFCCC. For example, the preamble to the Paris Agreement recognizes that "Parties may be affected not only by climate change, but also by the impacts of the measures taken in response to it". Article 4.15 states that "Parties shall take into consideration in the implementation of this Agreement the concerns of Parties with economies most affected by the impacts of response measures, particularly developing country Parties".

In this context, addressing the impacts of the implementation of response measures will require taking into consideration the following obstacles to sustainable development that often are present in developing countries:

- Old technologies and low levels of technological capability. Because of their lower income levels, developing countries use older technologies more heavily as both the technology and the inputs in the use of these technologies cost less and are more widely available. Developing countries often have less well-developed educational sectors and suffer from an inadequate supply of skills in advanced technologies; there may, however, be developing countries, such as Persian Gulf countries, that have developed their educational sectors.
- Low incomes and small domestic markets. Lower skills lead to lower wages and incomes in most non-OECD countries (there are some developing countries that have high incomes per capita due to the exploitation of their natural resource endowments, such as Gulf countries). These make domestic markets in developing countries generally significantly smaller and often more vulnerable to external shocks. Response measures should not obstruct the ability of countries to increase domestic incomes and the size of their economies.
- Dependence on exports on a few commodities, often with high carbon content and oriented towards markets that require long-distance transportation by air or sea. Response measures must be assessed in terms of whether they have a negative impact on the efforts of developing countries to diversify their exports. This is particularly relevant to oil-dependent developing countries.
- Low level of productivity and wages and vulnerable livelihoods. To achieve sustainable development in developing countries, the working population must move from low-productivity jobs to higher-productivity jobs, from vulnerable livelihoods to secure, dignified jobs. Response measures should not obstruct the possibility of introducing new, more productive jobs in an economy and the pursuit of just transition of the workforce and the creation of quality jobs, taking into consideration gender and youth issues.
- Low level of diversification of economic activities. Developing countries seeking to achieve sustainable development are characterized as having a limited number of economic sectors and thus a more limited variety

of occupations and jobs. They will require support to transform the economy and to increase socio-economic resilience.

- Low level of technology development and facility with tools, methodology and frameworks for the assessment of impacts and modelling.

Therefore, the economic and social consequences of actual and potential response measures are an important issue for all developing countries. Such measures may have positive effects if on balance they support improved access to energy, health care, poverty reduction and decent and quality employment in developing countries. But they may have negative effects if they constitute a means of transferring the burden of climate change mitigation to developing countries or otherwise distort national and social conditions. The adverse impacts of response measures would constitute an additional burden for developing countries – undermining their economic and social development and poverty eradication efforts. These adverse impacts are also contrary to the expectations of the principles of the Convention about common but differentiated responsibilities, equity and respective capabilities.

The combination of policy responses and technological shifts (e.g., towards more energy-efficient and non-fossil-fuel-energy-using technologies in production and consumption of goods and energy) has led some observers to reflect that a massive transition away from fossil fuels is underway. For example, the 2021 World Energy Outlook prepared by the International Energy Agency (IEA) suggests that "an unstoppable energy transition is underway and the 2020s will be a decade of profound change, powered by a virtuous cycle of policy action and technology innovation. But the report notes that policy remains too slow and too wedded to the old system: stated policies are behind announced pledges (the 'implementation gap') and even further behind a net zero by 2050 scenario (the 'ambition gap')."[65]

As noted above, the multilateral climate regime under the Convention and the Paris Agreement recognizes that the implementation of response measures has impacts on Parties, in particular developing countries, and thus calls on all Parties to address these impacts. Changes in prices and quantities for internationally traded goods and services can result from the implementation of mitigation policies. Economies heavily dependent on production and export

of oil and other fossil fuels, tourism services, and agricultural commodities which may be impacted by response measures are highly vulnerable.

For example, a study undertaken by Carbon Tracker looking at the income implications of such an energy transition projects that "all oil producing countries risk collectively losing $13 trillion by 2040 compared with industry expectations, a 51% drop."[66] Even oil industry analyses are forecasting that while oil and gas demand will continue to rise for the next several years, such demand growth is however slowing and the investment environment for the oil and gas sector is becoming more challenging in the face of uncertainty and risks such as record price volatility, evolving government regulations, increasingly diverging long-term demand narratives, and non-standardized environmental safeguards criteria; and the lower-price cycle of the past six years and long-term demand debates have driven up investment hurdles and the cost of capital for long-cycle oil projects, fostering an environment of "pre-emptive underinvestment" for oil and gas supply, where investments are lagging robust demand.[67]

The governments of developing countries that are dependent on their oil resources for national revenue are deeply concerned about the adverse economic and social effects of downward oil price shocks due to their knock-on effects on political stability. Given that policy and technological shifts can give rise to such oil price shocks, it is not surprising that the governments of these countries have been taking an active interest in shaping multilateral climate policy formulation and response processes such as the UNFCCC and Paris Agreement. In this context, active engagement in the UNFCCC discussions in relation to response measures and economic diversification has been one of the key elements of this approach.

Although the UNFCCC does not directly address the issue of economic diversification, it does stipulate that measures to address climate change should not present adverse economic and social consequences for developing countries. Such an occurrence would create undue burden for developing countries which are already particularly affected by the impacts of a warming planet.[68] Meanwhile in the Paris Agreement, economic diversification is explicitly referred to in Article 4.7 in relation to mitigation and in Article 7.9(e) in relation to adaptation:

> "7. Mitigation co-benefits resulting from Parties' adaptation actions and/or economic diversification plans can contribute to mitigation outcomes under this Article."[69]
>
> "9. Each Party shall, as appropriate, engage in adaptation planning processes and the implementation of actions, including the development or enhancement of relevant plans, policies and/or contributions, which may include: … (e) Building the resilience of socioeconomic and ecological systems, including through economic diversification and sustainable management of natural resources."[70]

The mitigation co-benefits of adaptation and economic diversification would be the greenhouse gas emission reductions that are the result of the implementation of adaptation-related and economic diversification actions, as stated above in Article 4.7 of the Paris Agreement. However, this wording does not make clear how co-benefits of adaptation are to be integrated and recognized under the Agreement, as they are not mentioned under accounting (Article 4.13), market mechanisms (Article 6) or transparency (Article 13). Nevertheless, Article 4.7 provides a good anchor even if its operationalization remains unclear.

Beyond "classical" adaptation, actions supporting economic diversification can also have co-benefits relating to adaptation and mitigation, as defined in Decision 24/CP.18 of COP18 in Doha in 2012. The central tenets of adaptation under the Paris Agreement are laid out in Article 7, with the overarching goal of "enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change" (Article 7.1). Article 7.4 recognizes the link between the mitigation ambition level and the adaptation needs but shies away from quantifying adaptation. Article 7 stresses the country-driven nature of adaptation approaches and specifies (Article 7.10) that each country prepares an adaptation communication defining its priorities, its implementation and support needs and projects and measures.[71]

A review of various reports submitted by Parties under the UNFCCC, including their national communications (NCs), national inventory reports (NIRs), biennial reports (BRs) and biennial update reports (BURs), however, indicates that very limited information has been reported on economic

diversification. Only two of the Parties included in Annex I to the Convention (Annex I Parties) included information related to economic diversification in their NIRs and a number of non-Annex I developing country Parties included information on economic diversification as part of their intended nationally determined contributions (INDCs).[72] From the current set of NDCs, economic diversification features prominently in the NDCs of developing countries whose economies show a great dependency on oil production, such as Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE.[73]

In addition to enhancing the ability to respond to and address the economic and social impacts of climate change response measures taken by other Parties pursuant to their UNFCCC and Paris Agreement commitments and NDCs, economic diversification can enhance the ability of oil-dependent developing countries to pursue their sustainable development objectives in the light of what is increasingly a policy-driven decrease in demand for fossil fuels.

To address both technology- and policy-driven future declines in the demand for fossil fuels, especially oil, many developing country governments whose economies are dependent on these fossil fuels are scaling up their economic diversification planning and efforts. Decreasing global demand for oil is leading policymakers in these countries to promote diversification into alternate economic sectors over the medium and long term, and to protect and enhance the competitiveness of their oil industries over the short and medium term. [74]

The consideration of economic diversification in the context of the multilateral climate change policy regime should be viewed from the perspective that the decisions on what and how to undertake economic diversification and any implied structural transformations are the purview of the national government(s) and their citizens in the context of the right to development and Agenda 2030. This is because it is a matter of sustainable industrial and economic planning, access to resources, including technology, training, and transition adjustment relief policies. Measures taken to address climate change stimulated by the unilateral action of one party, or under multilateral agreement, can either present obstacles to planned or ongoing programmes of economic diversification or accelerate such processes.

Economic diversification is both a goal and a multi-purpose, multidimensional process, depending on the starting point. For developing countries, this can range from countries that seek to diversify outputs to those that are more focused on diversifying their export basket, in terms of its composition, volume, and direction of trade. Some may seek diversification through global value change processes, others by a variety of other means. Some countries have more options and degrees of freedom in terms of policy space and finance while others have limited diversification options. It entails a broad societal process which transforms a country from depending on a single source of income, in this case oil or gas, to a society where multiple sources of income are generated across the primary, secondary and tertiary sectors, and where large sections of the population participate, including the private sector.[75]

Economic diversification should ideally result in developing a more robust range of sectors that can provide a more diverse range of goods and services for both domestic consumption and international trade; enhance the performance of non-agriculture sectors such as manufacturing, services, construction, infrastructure, tourism, information and communication technology, finance, etc.; and significantly contribute to sustaining long-term economic growth and development of the country and the maintenance or creation of international competitiveness in the world economy.[76] In the context of, for example, oil-dependent developing countries in the Middle East, economic diversification would be the key towards transitioning away from oil dependency and creating more resilient economies, under which revenues from oil and gas production would be used to create infrastructure, production facilities, education, health, housing and "soft infrastructure" in terms of efficient administrative and legal institutions that promote global competitiveness of the countries.[77]

Additionally, promoting economic diversification hinges on the equitable and fair resolution of other issues within the multilateral climate change, trade, and other regimes, such as the transfer and development of environmentally sound technologies, the provision of intellectual property rights flexibilities with respect to the needed technologies, the reflection of the principles of common but differentiated responsibilities and of special and differential treatment (SDT) for developing countries, and the provision of new, additional and adequate finance for mitigation, adaptation, economic diversification, and loss and damage.

3 Economic Diversification in Practice Among Oil-Dependent Developing Countries in the Persian Gulf

A. Economic diversification as a development imperative in the Gulf

OIL-PRODUCING and -exporting developing countries in the Persian Gulf region have long recognized that their economic dependency on oil cannot last. This dependency leaves them more vulnerable to externally driven shocks (such as oil price shocks and climate change policy response measures) and, over the long term, to declines in output of a diminishing natural resource. At the same time, however, the significant revenues brought in by oil have enabled these countries to improve the economic and social wellbeing of their peoples, albeit on a relatively fragile and volatile natural resource foundation and generally through the use of a "rentier social contract" in which governments distribute oil revenues to their people through, for example, guaranteed and well-paid employment in the public sector, low or no income taxes, and subsidized prices for housing, fuel, electricity, and water.[78]

To shift their economies away from oil dependency, develop and maintain global economic competitiveness, ensure economic and political stability, provide more jobs for their citizens, and reduce the impact of volatile oil prices, the Gulf countries have separately embarked on national economic diversification strategies since the 1970s.[79] In large part, these strategies share some common themes – they seek to develop knowledge-based industrialized economies, strengthen the role of the private sector in their economies, and attract foreign investment.[80]

1. Bahrain

In 2003, the Kingdom of Bahrain adopted its Economic Vision 2030. The kingdom is a small island developing country, consisting of an archipelago of 33 natural islands with an additional 51 artificial ones with a total land area of 765 km^2. Average per capita income was around $22,000 in 2019, although it is higher for Bahrainis compared with non-nationals. At the same time, Bahrain faces environmental challenges, including pollution and sea level rise.[81]

Under its Economic Vision 2030, the kingdom seeks to transform its economy "to ensure sustainability, diversity, competitiveness, and justice, amongst other goals." This is in recognition that Bahrain's economy continues to depend on oil revenues, with little diversification away from the oil sector. The national budget remains captive to the volatility in international oil markets, given that the Bahraini oil sector accounts for two-thirds of treasury income and export earnings.

In this context, Bahrain's Economic Vision 2030 envisions an economy in which the main driver of growth and employment has shifted from the public to the private sector, and where "productive enterprises, engaged in high value-added activities, offer attractive career opportunities to suitably skilled Bahrainis."[82] It seeks to strengthen the non-oil component of Bahrain's economy through diversified economic activity in which the financial sector would be the economic engine and be increasingly complemented by growth in other high-potential sectors. This would entail the development of its national tourism sector, strengthening Bahrain's role as a regional leader in financial services (including in insurance and Islamic finance), and development of business services, manufacturing (especially for export markets), logistics, knowledge-based sectors and innovation.[83]

Through its economic diversification programme, the Bahrain government seeks to increasingly reduce its dependence on oil revenues for funding recurrent expenditures through generating additional, non-oil-dependent revenue sources and reducing subsidies for water, electricity, gasoline and food consumption, and at the same time use oil revenues to support its economic diversification efforts through strengthening Bahrain's education

and health care systems, investing in its business and economic environment, and investing in sustainable development actions such as nature space conservation, energy efficiency, and investment in technologies that reduce carbon emissions, minimize pollution, and promote the sourcing of more sustainable energy.[84] However, there seem to be no plans for Bahrain to diversify its domestic energy mix away from oil to renewable energy despite the ready availability of solar energy due to Bahrain's sunny climate. [85]

2. Kuwait

Kuwait is the Gulf country that is most dependent on revenues from oil. It has a large amount of proven oil reserves and a relatively small national population compared with its Gulf neighbours. It has also long acknowledged the need to diversify its economy from oil dependence but has been significantly lagging behind its Gulf peers in terms of its non-oil sector development. Certain economic diversification policies have been introduced so far, but their implementation has been largely problematic, and success limited. The slow pace of economic diversification and restructuring in Kuwait has been largely attributed to the government being too reluctant to enforce the restructuring and opting instead for populist policies for the sake of regime security, including reluctance within parliament to reduce benefits and subsidies given to Kuwaitis from oil revenues.[86]

Nevertheless, Kuwait's Vision 2035 New Kuwait Development Plan now envisions a diversified economy to reduce the country's dependence on oil export revenue. Key components of this plan include the establishment of industrial economic zones, large-scale and environmentally sustainable public housing, transportation, commercial, and industrial infrastructure development, and the development and expansion of the oil refining industry to develop petroleum derivatives. Kuwait also intends to expand its environmental management and pollution control sectors and build up a renewable energy complex to be integrated into its domestic energy mix. Large-scale investments, including public, private, and foreign, are also targeted and encouraged to go into the development of the country's information technology, services, and tourism sectors, with an increasing reliance on the private sector.[87]

3. Oman

Like its neighbours in the Gulf region, Oman is also dependent on its oil and gas export revenues to support its economic development, with such revenues providing between two-thirds and more than four-fifths of the government's annual revenue since the late 1980s. These revenues were used by the government to establish a rentier social contract like those of its neighbours, resulting in the building of a modern economic infrastructure and an increased standard of living for Omanis. Unlike its neighbours, however, Oman has relatively limited oil and gas reserves which, if utilized at current production levels, will run out at some point between 2030 and 2040. This situation has made Oman's economic diversification away from oil and gas dependence highly urgent.[88]

Oman's Vision 2020 set out in 2015 aimed to use oil and gas revenues to achieve economic diversification by scaling up the contribution of non-oil sectors – manufacturing, transport and logistic services, fisheries, mining, and tourism – in the Omani economy. However, low oil prices in the late 2010s, coupled with the impact of the COVID-19 pandemic, reduced such oil and gas revenues and made it difficult for the government to achieve its Vision 2020 objectives.[89]

In late 2020, the government announced the launch of Oman 2040 as the country's new blueprint for economic and social development. It set out a vision for the transition of Oman from an oil-based economy towards a more diverse knowledge-based one.[90] Oman 2040 envisions an economic diversification pathway that focuses on technology, knowledge, and innovation, reinforcing upstream and downstream integration among economic sectors to expand the production and export base, diversify trading partners, deepen investment in high-value-added sectors, and enhance the contribution of non-oil sectors to the gross domestic product (GDP). Through public-private partnerships, the nurturing of a homegrown private sector, as well as public infrastructure investments, Oman 2040 sees increasing domestic innovation, research and development into new technology and knowledge-based economic sectors that would allow Omani industries to produce competitive products and services with higher knowledge and technology components – particularly in tourism, education, manufacturing, trade and

transport logistics, fisheries, mining, and downstream oil and gas-based industries. Oman 2040 also envisions ramping up the contribution of renewable energy resources to the country's domestic energy mix from 20% in 2030 to 35-39% in 2040.[91]

Since its launch, implementation activities to fulfil Oman 2040 have started, including the launch of Oman's Industry Strategy 2040 that envisions a well-developed manufacturing base by 2040 leveraging modern technology, local Omani talent, and the latest innovations; the development of major tourism sites; the expansion of trade and transport logistics activities; the launch of new major fisheries-related projects; the launch of renewable energy and energy efficiency projects; and expanded mineral resource exploration.[92]

4. Qatar

Through its National Vision 2030, Qatar plans to develop itself into a developed country that has a prosperous citizenry with a self-reliant and sustainable economy. To do so, it aims to continue to rely on its oil and gas sector until 2030 while at the same time enhancing and diversifying into non-energy sectors such as knowledge-based technology sectors to generate increased employed for Qatari nationals.[93] In essence, it plans to use oil and gas revenues from its oil, gas, petrochemical and heavy industries[94] to support the early stages and foundations of economic diversification and pay for increasing environmental protection and pollution control.

In this context, Qatar has focused on establishing advanced educational, training, and health systems; investment into public infrastructure; building efficient delivery mechanisms for public services; encouraging private sector entrepreneurship and innovation; and supporting the increasing participation of Qatari nationals in the labour force.[95]

At the same time, while pushing for a decrease in reliance on oil and gas, part of Qatar's economic diversification strategy continues to see oil and gas playing a role in a diversified economy through the expansion of non-energy petrochemical services and industries (such as plastics and other non-energy petrochemicals).[96] Qatar's National Vision 2030 also seeks to establish a balance between Qatar's economic diversification and environmental protection.

5. Saudi Arabia

The biggest of the Gulf countries in terms of size, population, and economy, Saudi Arabia's economic diversification approach is both like and different from those of its neighbours. The challenges that it faces reflect commonalities with other Gulf states but also have significant differences that Saudi economic planners are cognizant about. Focusing on Saudi Arabia is important given its role as the world's biggest oil exporter and the second biggest oil producer. Its success at diversifying its economy away from oil dependency could highlight possibilities and development pathways that other oil-dependent developing countries could learn from and apply to their own national circumstances.

Like in the other Gulf states, oil revenue enabled the establishment of a rentier social contract between the rulers and the ruled, with oil revenue being used to build the Saudi economy, infrastructure, and military, build roads, provide education, fund social services, subsidize the price of key staples, and even employ large segments of the population (about two-thirds of working Saudis are employed in the public sector).[97]

Saudi Arabia's current Vision 2030 is the latest in a series of multi-year development plans since the 1970s that were designed to modernize its economy and move it away from its dependence on oil for 92% of total government revenues and almost 50% of national GDP, in recognition that such dependence is not conducive to long-term economic stability and sustainability.[98] While important advances have been made, Saudi Arabia has not yet been able to move and diversify away from its dependence on oil-based products.[99]

Adopted in 2016, Vision 2030 seeks to transform and build a thriving Saudi economy through, inter alia, eliminating many oil subsidies to help modernize the oil sector, while capitalizing upon downstream opportunities in oil and petrochemicals, as well as exploiting the mining of other natural resources; building renewable energy and military industrial sectors and further developing the retail, tourism, and manufacturing sectors; and creating a regional logistical hub, while integrating Saudi Arabia more tightly into the regional and global economies:[100]

- There are plans to expand exploration and development of non-oil mineral resources such as aluminium, phosphate, gold, copper, uranium and other raw materials.[101] At the same time, the oil and gas sector will continue to play a significant part in the Saudi economy, particularly with plans to invest in oil and gas infrastructure, the doubling of domestic gas production, the construction of a national gas distribution network, and the use of oil and gas resources to develop home-grown adjacent and supporting petrochemical industrial sectors and products.[102]
- In manufacturing and technology, the localization of renewable energy and industrial equipment and the development of digital technologies are key objectives.[103] For renewable energy, in particular for solar and wind, the objective is to develop a home-grown renewable energy value chain that includes research and development and manufacturing, and prioritizing the use of domestically sourced raw material inputs (minerals and petrochemicals) and expertise, through public-private partnerships and the introduction of renewable energy into the domestic energy mix and fuels market.[104] Diversification away from oil dependence for domestic energy applications is based on reforming fossil fuel subsidies (by raising prices and reducing demand for transport fuels, electricity, and desalinated water), increasing energy efficiency, using renewable energies such as solar and wind, expanding the use of gas (e.g., liquified natural gas and methane), decreasing the use of oil for domestic power, developing nuclear energy, enhancing oil recovery, and developing and using carbon capture, utilization and storage technologies.[105]
- Creating a domestic military industrial complex is seen as a key pillar for Saudi economic diversification, in terms of both reducing military spending (by reducing reliance on foreign military hardware and boosting domestic sourcing of military equipment to 50% by 2030) and promoting innovation, development, and export of other domestic industrial sectors such as industrial equipment (e.g., spare parts and ammunition), transportation (vehicles and aircraft), communications and information technology, as well as the development of a domestic manufacturing, maintenance, repair, research and development network for defence technologies.[106]
- Tourism, real estate development, and the entertainment sector are also important areas for diversification under Vision 2030. For example, the government has been investing heavily in the tourism industry with the

development of tourism and entertainment attractions, development of historical and heritage sites, and easing of visa restrictions with the aim of increasing the tourism sector's contribution to 10% of GDP by 2030.[107]

- Logistics services are seen as a key element in Vision 2030's diversification approach in order to capitalize on Saudi Arabia's geographic position between Asia, Europe and Africa, with access to major waterways key to global trade (such as the Red Sea, Persian Gulf, Arabian Sea and Indian Ocean).[108]
- Saudi Arabia also plans to invest in and support domestic companies, particularly those that already have a leading market share or have promising growth potential, by promoting their products and services regionally and globally, especially in the fields of oil, petrochemicals, banking, telecommunications, food, health care, and retail, to help them obtain and develop overseas markets, export their products, and develop regional and global corporate presence and market leadership.[109]

Such efforts at diversification are starting to bear fruit, as the non-oil part of GDP spurred growth despite contraction in the oil sector in 2019.[110] Hence, while calling for the development of a more robust private sector in the kingdom, Vision 2030 looks towards building strategic, state-owned industries in key economic sectors and thereby expanding a state-led private sector.[111] Much of the funding for Vision 2030's projects would come from the kingdom's sovereign wealth fund – the Public Investment Fund (PIF) – with the PIF being funded initially through oil revenues and subsequently expected to raise capital from investments in offshore assets whose revenue would then be used to develop new economic sectors, develop real estate, infrastructure, and companies, and fund giant development projects.[112]

6. United Arab Emirates

The UAE, unlike its Gulf neighbours, is not a centralized unitary state. It is a constitutional federation of emirates in which the constitutive emirates and the federal government share power and are allocated specific powers and jurisdiction under its constitution.[113] Since its formation in 1972, economic diversification away from oil dependency has been a clearly stated governmental policy; it has since then pursued a consistent policy of diversification under which it has become a global financial and major trading

centre, a major global tourism hotspot, a commercial and residential real estate infrastructure development hotspot, a regional and global trade and transport logistics and services hub, an emerging hotspot for manufacturing, downstream non-energy petrochemicals and renewable energy, and a centre for technological innovation. As a result, the share of non-oil and gas sectors in national GDP has risen to more than 70% from a little over 50% in 2000.[114] The UAE promoted industrial development by establishing firms in manufacturing industries associated with oil and gas, including refineries, fertilizer plants, and aluminium smelters – essentially using oil and gas revenues to fuel economic diversification.[115]

The UAE's Vision 2021 seeks to reduce the share of oil revenues in the UAE's GDP to only 5% by diversifying revenue sources, investments in non-oil sectors (finance, trade logistics, tourism, real estate, renewable energy), and trade infrastructure. The UAE's economy is one of the most diversified among the Gulf countries, spurred by significant increases in industrial infrastructure spending (predominately in the aviation, aerospace and defence sectors), the rising share of services and financial sectors, significant investments in education, health care, water, communications, transportation, tourism, and other non-hydrocarbon sectors, and energy sector diversification through investment in renewable and alternative energy sources such as solar, carbon capture and storage, and clean technology.[116]

To carry forward economic diversification after 2021, the UAE is seeking to further attract investments in scientific research, logistics, health care, food security, manufacturing and advanced technologies, and renewable energy. It recently launched a new industrial strategy intended to make the UAE's industrial sector the main driving force of the national economy by using domestic expertise and investments into domestic research, development and innovation to establish and expand Emirati expertise and presence in key economic and industrial sectors such as energy, petrochemicals, plastics, metals, manufacturing, tourism, aviation, financial and banking services, trade and transport logistics, as well as those that reinforce the country's resilience and reduce its dependence on global supply chains, such as food, agriculture, water, and health care, and future industrial sectors such as artificial intelligence and the digital economy, space technologies, renewable energy, green technology, energy efficiency, pharmaceuticals, and the biotechnology and medical technology industries.[117]

The UAE's economic diversification strategy towards 2030 is powered by the diversification strategies of its two richest emirates – Dubai and Abu Dhabi. For example, Abu Dhabi's Economic Vision 2030 has identified the aerospace and health care equipment industries as the engines of future growth, alongside established manufacturing industries (such as oil and gas, petrochemicals and metals) and a number of service industries (including tourism, education, media, trade and transportation logistics, finance, and telecommunications), including capital-intensive and export-oriented sectors (pharmaceuticals, biotechnology and life sciences, construction and engineering, electronics). The Dubai Industrial Strategy 2030 also targets the aerospace and medical equipment industries, as well as several other high-technology activities such as ship repair and maintenance, maritime, aluminium, fabricated metals, pharmaceuticals, food and beverages, and machinery and equipment.[118]

B. Lessons from Gulf countries' economic diversification approaches

1. Recognizing the need for transformative change

The national visions[119] of various Gulf countries briefly described above highlight economic diversification as the pathway towards long-term economic sustainability and prosperity. As they implemented economic diversification policies over the last two decades, there has been an overall decline in the share of oil and gas in GDP and increased spending on industrial infrastructure across the region, a rising share in GDP of the services and financial sectors, major investments in education, health care, water, communications, transportation, tourism, and other non-hydrocarbon sectors, and investments in renewable and alternative energy sources such as solar, carbon capture and storage, and clean technology. The Gulf countries have also strengthened their food security by acquiring large areas of farmland outside their own national borders and investing heavily in major agricultural projects in Sudan, Ethiopia, Egypt, Turkey, Ukraine, Kazakhstan, Philippines, and Brazil.[120]

The underlying strategy is to move their economies away from rent-seeking reliance on oil or gas coupled with an allocative approach to welfare distribution, towards developing economies in which incomes are generated through the production of non-oil/gas goods and services. This will require a

transformative type of economic diversification that will fundamentally change the underlying conditions for economic activity and governance in these countries.

2. Addressing external climate and geopolitical shocks, economic uncertainty, the global energy transition, and structural barriers

There are structural and political barriers that need to be addressed, such as highly volatile global economic conditions, intra-Gulf economic duplication and competition, and domestic political challenges.[121] For example, low oil prices in the mid- and late 2010s led to budgetary deficits and consequent fiscal consolidation in the Gulf oil-exporting countries, making it difficult for their governments to invest more in their economic diversification and domestic industrialization efforts.[122] The impact of the COVID-19 pandemic caused a global collapse in oil demand and a consequent global oil price shock that adversely impacted the fiscal position of oil-exporting developing countries.[123] However, by late 2021, demand for and prices of fossil fuels, particularly oil, had rebounded although significant volatility remains.[124]

The armed conflict between Russia and Ukraine, with the latter being politically and materially supported by the European Union, NATO, and their allies, is having significant impacts on global energy and agricultural commodities markets. These include disruptions in global exports of agricultural commodities from Ukraine and Russia and a policy-driven shift away from reliance on Russian oil and natural gas exports on the part of the European Union. These affect Gulf countries in various ways.

The Russo-Ukraine conflict reflects underlying longstanding geopolitical tensions between Russia and the global North. The impact of punitive economic sanctions imposed by the global North on Russia has disrupted global oil and gas markets and caused oil and gas prices to increase sharply.[125] Additionally, the conflict has caused price shocks to other global commodity markets such as wheat, various metals, and other commodities, as well as increasing global food insecurity.[126]

As European countries dependent on Russian oil and gas supplies scramble to seek new sources, they have turned to Gulf countries.[127] The impact of the conflict on Gulf countries varies, ranging from concerns over the increasing

cost of their food and other imports from Ukraine and Russia, expectations of increased revenues due to sharp increases in oil and gas export prices, and adverse impacts on tourism and other non-oil or gas sectors, to geopolitical concerns of balancing between the global North and Russia.[128] One of the most visible impacts on Gulf oil-dependent countries has been on the expanded market opportunities for their oil and gas producers as alternatives to Russian suppliers in both Europe and Asia, although at the same time, there could be increased competition in Gulf countries' existing oil and gas markets in Asia (such as China and India) as Russian suppliers lower prices to attract Asian consumers.[129] This has led some Gulf countries such as Saudi Arabia to explore expanding oil and gas production capacity.[130]

At the same time, however, there is also a growing recognition that the pace of oil demand growth is likely to slow over time, eventually plateauing or declining, as efficiency improvements, technological advances, climate change and environmental policies and changing social preferences lead to substitution away from oil in sectors (such as transportation) which have historically driven oil demand growth.[131] This recognition of the global energy transition is permeating oil producer countries' policymaking, leading them in various ways to undertake various strategies intended to place their economies on a pathway for transition away from oil and gas dependency.[132] Oil demand is unlikely to increase over the next few decades and the viability of renewable energy and its share in global and national energy mixes are at an inflection point.[133]

The possible impacts, for example, of multilateral and national climate change-related mitigation-focused response measures on oil, gas, and coal demand[134] will likely play a significant role in long-term economic diversification strategies. These impacts will include not only technological, production, and consumer shifts away from fossil-fuel-energy-consuming production and consumption but also changes in the direction of financial investments. Reduced demand for oil, for example, will turn the oil reserves of many oil-producing and -exporting developing countries such as those in the Gulf into stranded assets. Some studies have shown that to meet the Paris Agreement's 2°C long-term temperature goal, a third of oil, half of gas, and 80% of coal reserves need to be kept in the ground – in the Middle East alone, for example, about 260 billion barrels of oil reserves should be kept in

the ground, on top of the economic losses associated with the stranding of existing oil extraction and production equipment.[135] Furthermore, for the Gulf countries, the emergence of the United States as among the biggest global oil and gas producers has decreased their share in the global oil market.[136]

However, the speed of the energy transition globally is highly uncertain,[137] and neither will such transition be uniform across countries or world regions. What this means is that any economic diversification strategy adopted by the Gulf oil production- or export-dependent countries will be conditioned by the speed of the energy transition, during which the oil sector will continue to play a key role in these economies, including in their diversification efforts. These countries will then need to be more strategic in developing their energy sector, including renewables, and diversifying their economies. Their success or failure in doing so and the speed at which they transition to more diversified and more resilient economies will also shape the global energy transition.[138]

For Gulf countries, as well as for other oil production- and export-dependent developing countries, their economic diversification efforts and the pace and direction of the global energy transition will be co-dependent and synergistic. For example, as Gulf countries push and succeed in their economic diversification efforts, they would be able to make their economies more resilient to external oil price shocks; on the other hand, failure in their diversification efforts could result in more volatility in the global oil markets as the oil exporters seek to control production and supply in order to push up prices – doing so, however, would likely speed up the global energy transition as consumers shift to energy-efficient and non-fossil-fuel-dependent technologies and products.[139]

This means that the economic diversification efforts in the Gulf countries are not linearly progressive – i.e., they will also be sensitive to changes in external and internal circumstances that may make economic diversification more or less of a national policy priority.[140] For example, in the late 2000s and early 2010s, high oil prices brought in high levels of governmental revenue that in effect disincentivized economic diversification efforts, while a sharp fall in oil prices in the mid-2010s coupled with other economic and political shocks (such as geopolitical tensions and conflict in the Gulf area) highlighted economic vulnerability and triggered a renewed effort for economic diversification.[141]

What remains to be seen is whether the high oil and gas prices brought about by the COVID-19 pandemic and the Ukraine-Russia conflict, together with the concomitant higher revenue streams these will bring to the Gulf oil-dependent countries, will provide additional resources for continued diversification or instead disincentivize national economic diversification efforts.[142] The record of success in terms of diversifying away from oil dependence in these Gulf countries is mixed. Even as they developed non-fossil-fuel industries, services, and other sectors and reduced the relative size of the oil sector in their economies, the contribution of the oil sector to their economies remains high.[143]

What these imply is that when it comes to adopting and implementing economic diversification strategies, particularly among oil-dependent Gulf countries, policymakers will need to consider significant levels of uncertainty about the progress of key trends such as how fast and uniformly a global energy transition will take place, whether there will be a sudden and sharp discontinuation in oil demand as a result, or whether oil will continue to be used for energy and non-energy purposes.

3. Enhancing the role of a developmental state for planned economic diversification

Economic diversification in oil production- or export-dependent developing countries, as can be seen in the Gulf, would generally be through a planned and policy-driven economic transition driven by the government, in which the public sector, rather than purely market-driven approaches, plays a major part in developing new economic activities and in encouraging private sector development.[144] The diversification process is often conditioned on a planned transition with the possible continued role of the oil sector in their economies as a source of material inputs into other, non-energy uses of oil (such as petrochemicals and plastics) to generate revenue.[145]

This will require, among other things, sufficient policy and fiscal space at the international and domestic level for national policymakers to be able to design and implement the appropriate mix of policy, fiscal, investment and other instruments that would be needed to make sure that economic diversification is undertaken in a managed manner so as to avoid or mitigate adverse economic and social consequences.

Furthermore, given the heterogeneity among individual Gulf countries and their different economic, population, and land and natural resource endowments, economic diversification policies would need to be tailored according to each country's specific national circumstances (no "one size fits all").[146] In the context of the Gulf countries, economic diversification means reducing their heavy dependence on the oil sector by developing a non-oil economy, non-oil exports and non-oil revenue sources and, by implication, reducing the leading role of the public sector in these countries by promoting the growth of the private sector.

The Gulf countries tend to incorporate their economic diversification strategies within a broader national planning document that outlines the aims and aspirations of the rulers for their countries. These plans vary in scope, level of detail and in quality, often highlighting broader targets which are to be implemented through detailed plans and spending budgets. As noted by an author, "Even though many of the plans have been drafted with input from international consultancy firms, and thus may represent some degree of 'knowledge transfer' related to ideologies and international best practice etc., such plans are ultimately official documents, prepared in ministries, discussed among top decision makers, and approved by the local rulers, who thereby subscribe to the overall ideas and conclusions embodied in the plans."[147]

4. Using an integrated and cross-sectoral industrialization and diversification strategy

To achieve economic diversification, Gulf countries generally seek to invest their current oil and gas revenues in economic assets such as infrastructure, production facilities, housing, education, health, and "soft infrastructure" such as administrative and legal practices etc., to develop international competitiveness and generate a future income.

The economic diversification plans that they have put forward generally take a three-step approach:[148]

(1) Diversification within their oil and gas sector by using crude oil or gas output to produce downstream products, such as petrochemicals,

fertilizer and chemicals, or as cheap fuel in energy-intensive industries, such as aluminium or steel;

(2) Further diversification within already successful activities or sectors within their respective economies. These include banking or processing raw aluminium in Bahrain; logistics, the seaports and trade sector in Dubai; the trade sector in Kuwait; and the liquified petroleum gas industry and steel mills in Oman;

(3) Introduction of new sectors, industries or activities which hold high growth potential within a globalized economy, such as aviation (airports, airlines, and air transport servicing and logistics), tourism and hospitality (such as conference and experiential tourism), real estate, logistics and business services or, within manufacturing, high-technology-content products like smart technologies or green technologies.

More specifically, the approaches undertaken by Gulf countries to achieve economic diversification (and development in general) feature the following:[149]

- The development of the physical and social infrastructure, including investments in public infrastructure, education and health care as essential foundations for non-oil economy growth;
- The development of capital-intensive industries that utilize the country's oil and gas resources for the production, for example, of steel, aluminium, fertilizer and petrochemicals (i.e., chemical components derived from oil which serve as building blocks for products such as detergents, adhesives, plastics, fibres, lubricants and gels);[150]
- The development of other manufacturing industries such as cement, construction materials (plaster, cladding, rebar, window frames etc.), electrical products, textiles, clothing, furniture and household items;
- The development of other productive sectors and services such as agriculture (animal production, poultry, dairy products), trade, banking, financial services and, since the early 2000s, aviation, real estate, tourism, and investments in overseas assets (e.g., hotel chains, harbours, real estate) to be managed from the Gulf;
- The reduction of the direct role of the public sector as an agent of economic growth by privatizing publicly owned companies and utilities and reducing domestic subsidies for water, electricity, housing, and food;

- The implementation of demand-side measures to reduce domestic fossil fuel energy use and the integration of renewable energy into their domestic energy mix given their great potential for renewable energy (especially solar and wind) to supply rising domestic energy demand and complement and eventually supplant domestic oil or gas use as well as provide a new energy export revenue stream.[151]

4 Conclusions and Recommendations

A. Equity, sustainable development, and international cooperation

THE lessons coming from the economic diversification experience of Gulf countries highlight the integrated and complex nature of the sustainable development challenge facing oil production- and export-dependent developing countries. This challenge is made particularly more acute in light of global economic volatility, the gathering pace of the global energy transition, the adverse effects of climate change and other environmental degradation processes, and imposition of climate change policy response measures by other countries.

It should be recalled that Article 4.10 of the UNFCCC calls on Parties to "take into consideration in the implementation of the commitments of the Convention the situation of Parties, particularly developing country Parties, with economies that are vulnerable to the adverse effects of the implementation of measures to respond to climate change. This applies notably to Parties with economies that are highly dependent on income generated from the production, processing and export, and/or consumption of fossil fuels and associated energy-intensive products and/or the use of fossil fuels for which such Parties have serious difficulties in switching to alternatives."

To implement Article 4.10, governments should ensure that the design and implementation of climate change response measures are equitable and do not adversely affect developing countries that are dependent on fossil fuel production, processing, and export. This would include, for example, supporting their economic diversification efforts through finance, technology

transfer, and the provision of appropriate policy space and flexibility to experiment with different national economic policies to find the policy mix that is best and most appropriate for their national context. Because of the economic nature of the systemic and structural changes that are needed to rapidly undertake effective economic diversification in the context of sustainable development and poverty eradication, national and multilateral climate change policy response measures need to be robust but at the same time equitable and flexible. Ensuring this is the case would be consistent with the principle of CBDR embedded in the UNFCCC and its Paris Agreement.

Promoting and accelerating a rapid transition away from fossil fuels, including by stopping the further expansion of fossil fuel production, as part of the package of urgent climate change response measures that need to be undertaken within this and the next decade will require that developing countries (particularly those that are dependent on oil and gas production and exports), including their governments and civil society, fully understand the necessity, scale, speed and practical means by which such transition can be done in a manner that will also address their longer-term sustainable development objectives, including the need to ensure equitable energy access for a growing population and domestic economic growth in these developing countries.

In this context, the developed countries, considering their historical responsibility, current capabilities, and continued high per-person emissions, must continue to take the lead in reducing global greenhouse gas emissions through domestic emissions reductions and in providing climate finance and technology transfer to developing countries.

Developing countries will have to ensure that their long-term sustainable development prospects are climate-proofed and made more climate-resilient by putting in place needed adaptation and economic diversification policies and strategies in a manner that is socially and economically equitable. This would imply looking at, inter alia:

- The energy access and energy infrastructure transformation to clean/ renewable energy possibilities for developing countries, in light of their sustainable development objectives;

- The technological and financing (including investment) needs for such transformation and ensuring that a just transition takes place, particularly in developing countries concerning their workforce and their marginalized and vulnerable populations, and ensuring that social and economic conditions for their populations remain stable or are improved and that national development objectives will be achieved;
- Identification of the economic diversification and transition sectors that could be developed in the economies of those developing countries that are likely to be adversely affected by emission-reduction-focused response measures of other countries, particularly in light of current economic contexts and existing sectoral dependencies and the need to avoid non-solutions (such as bio-energy carbon capture and storage, carbon trade markets, and geoengineering), or by initiatives to halt further expansion of fossil fuel production;
- Identification of key equity considerations from a developing country context in terms of the extent of diversification, financing requirements, technology requirements, social impacts, economic impacts, and transition costs, and other considerations associated with ensuring that there is a just transition in countries from today's fossil-fuel-dependent economies (whether in terms of export or import dependence or energy dependence) to ones that are more climate-resilient and adapted;
- Identification of international cooperation arrangements under the UNFCCC and its Paris Agreement that need to be enhanced or scaled up to better address equity, economic diversification, just transition for the workforce and other marginalized sectors, and the impact of response measures (including in climate finance, technology transfer, adaptation financing, and loss and damage financing).

This is particularly important for those developing countries whose economies rely on fossil fuels, whether in terms of imports for energy, exports as commodities, or for domestic energy use (e.g., for industry, transportation, aviation, heating/cooling, residential power, or desalination). For such countries, the key question that needs to be answered is how the economic needs that are currently filled by fossil fuels can be met – e.g., providing cheap usable energy to fuel the economy and generating revenue that can be used to provide income support to their populations and thereby maintain internal civil stability.

Corollary questions would include:

- what economic sectors would be viable targets to diversify to,
- at what speed the transition and diversification should take place considering the specific economic, resource endowment, political, and social circumstances of the country, and
- what can be done with the fossil-fuel-oriented infrastructure and other assets in the country to ensure their contribution to economic productivity.

Connected to this is the question of what then are the commensurate support measures that should be put in place at the international level through international cooperation under the Paris Agreement to address these concerns and ensure that economic diversification and just transition take place in a manner that promotes rather than negates sustainable economic, political, and social development in developing countries.

Therefore, proactive engagement by fossil fuel-dependent developing countries in these processes is very important, particularly to define the policy, economic, and support measures that need to be undertaken to achieve effective economic diversification and just transition.

Indeed, an essential part of climate change response measures is the fundamental question of energy as the critical enabler of development and good health. Shifting from dirty to clean energy is a vital step towards integrating health, energy, climate, and other priorities. In this context, the model of energy provision is key. Decentralized, demand-driven, clean, and renewable energy can power rural and peri-urban economic activities, health facilities, and systems for sanitation and hygiene, and enable effective irrigation and farming everywhere. Better access to clean energy makes communities more resilient to health and other shocks and is essential for economic development and the process of economic diversification.

In a recent paper by Muttitt and Kartha,[152] they point out that different countries will have different challenges when it comes to transitioning away from fossil fuel dependence because of different national circumstances. They highlight

that equity considerations applied to fossil fuel dependency mean that richer and more diversified economies (such as those in developed countries) are better able to phase out fossil fuels more quickly, and that fossil fuel-dependent developing countries should prioritize industrial policies that can engender rapid economic diversification in a manner that provides for a societally just and equitable transition.

B. Elements for reflecting equity in international cooperation for economic diversification

Addressing climate justice and equity considerations is a key step towards being able to ensure that global climate action is taken in a manner that is just and equitable, supporting an effective and just transition for communities, workers, and marginalized sectors in developing countries while also addressing social and economic inequalities on a long-term and sustainable basis.

The UN Conference on Trade and Development (UNCTAD) has identified the challenges faced by developing countries due to diminished fiscal and policy space, increased indebtedness, limited COVID-19 vaccine rollout, shocks arising from climate change, deepening economic and social divisions, intensified income and wealth inequalities, an unstable insertion into global financial markets, and capital flow volatility. It noted that developing countries confront the dilemma of having to pursue economic development while keeping emissions and resource consumption within the ecological limits of the planet, requiring new strategies that pursue structural transformation in a climate-constrained world while at the same time having to do so from a position of structural weakness in today's hyperglobalized economy and in terms of institutional weaknesses in their ability to mobilize domestic resources.[153] These interlinkages underscore the need to strengthen the coherence and consistency of the international financial, monetary and trading systems to include investment, development policy and environmental institutions and platforms, and to have deeper coordination in the areas of tax, competition and non-economic issues such as climate change, disaster risk, human rights, gender and migration given that the integrated nature of these risks can only be addressed through joint action.[154]

To ensure that equity is reflected in global climate change response measures and their impacts and considering the number of interlinked and serious problems arising from present development trends as well as historical colonialism and globalization,[155] an alternative, equity-oriented and ecologically harmonious development approach for the South should be adopted.

1. Strategic and proactive national economic development policies

In this context, at the national level, developing countries (especially those that are oil-dependent) should pursue a strategic and proactive approach to shaping and reshaping national economic development policies. In this regard, the role of a developmental state[156] will be important in triggering, driving, and guiding sustainable societal and economic transformation that would be focused on the implementation of green industrial policies that are appropriate to national economic circumstances.

UNCTAD has recommended[157] that the trajectory of development for developing countries should be to build a diversified low-carbon economic system, powered by renewable energy sources and green technologies, and where economic activities within and across sectors are interconnected through resource-efficient linkages. Such a solution maintains manufacturing as a central objective because important elements of structural transformation towards a more resilient low-carbon economy will, in most developing countries, continue to depend on the diversification into high-productivity high-wage activities.

A rapid transition away from fossil fuels globally will require, inter alia, that developing countries (particularly those that are dependent on oil and gas production and exports) do so in a manner that will also address their longer-term sustainable development objectives, including the need to ensure equitable energy access for a growing population and domestic economic growth in these developing countries.

The energy transition, along with an emergent circular economy, can provide opportunities for a reduction of the carbon footprint of traditional manufacturing, as well as for the manufacturing of devices for a low-carbon

economy. The transition to renewable energy and progress with the circular economy can increase the scope for industrialization for a broad range of developing countries because they decouple economic activities from reliance on exploiting non-renewable natural resource endowments. Activities related to renewable energy production and the circular economy can, according to UNCTAD, operate at a low scale, opening business opportunities for small firms and rural areas, help to diversify economic production structures and reduce many countries' dependence on the production of a narrow range of primary commodities. This could, in turn, enlarge the tax base and foster domestic resource mobilization as a source of development finance.[158]

None of these transformations are likely to occur without a developmental state. Successful structural transformations have generally relied on proactive government policies and effective regulations. Fiscal and monetary policy should be more targeted and directed to provide liquidity when needed to spur productivity in the real economy and manage demand. In addition to undertaking large-scale public investment and financing, sustainable industrial policies and the establishment of appropriate participatory governance would be needed to ensure that there would be clear rules to govern and implement societal and economic transformation that has political legitimacy and social buy-in from various social and economic sectors.[159]

Developing countries such as those in the Gulf that have a high level of dependency on economic sectors vulnerable to the adverse impacts of climate change or to climate change response measures would need to be more strategic and foresighted. Building on existing industries, governmental support in the form of policies, standards setting, industrial subsidies, investment channelling, skills retraining, technology upgrading or retrofitting, or other forms of support, could be deployed to help actors in these economic sectors, and the jobs that are dependent on these, to adapt and prepare better, to reactivate production and supply chains, and incentivize restructuring to build, diversify, and re-orient productive capabilities to increase resilience to future shocks. As the next step, targeted green industrial policies that foster innovation and circularity should be at the forefront to build manufacturing industries that are sustainable and resilient against future disruptions. To achieve this, investments in green technologies and resource

efficiency tools will be key as new alternatives for the organization of global production networks and value chains are identified.[160]

Hence, developing countries would need to pursue equity- and ecology-oriented economic policies for sustainable development and economic diversification. This would include the development of appropriate regulatory regimes and policies that incorporate the three aspects of sustainable development (environmental sustainability, economic development, and social development) into an integrated and multidimensional policy package.[161] These include:

- Recognizing the economic and social value of environmental resources
- Conserving resources and restoring damaged environments and ecosystems
- Enabling prices to better reflect environmental value, while ensuring access by the poor to basic goods and services
- Prioritizing and funding the critical role of the public sector to promote environmental and economic diversification objectives through financial, industrial, and technological policies and measures, including subsidies, incentives, use of government investment and budget, and placing limits on pollution and over-use of resources through regulation and other policies
- Regulating the market
- Recognizing and addressing the link between livelihoods and living conditions of rural communities and the environment
- Promoting sustainable consumption patterns and addressing their links to the environment, poverty, and equity
- Ensuring food security, rural livelihoods, sustainable agriculture, and sustainable industrialization
- Avoiding environmental and natural resource management policy approaches in which ecosystems and natural resource sectors (such as forests, coastal areas, land) become the basis for investment in or the development and sale of speculative financial instruments secured by ownership, usufructuary, or exploitation rights by private sector agents over such ecosystems or natural resource sectors.

In the context of the oil-dependent Gulf developing countries, while considering their different national circumstances and noting their economic diversification approaches as discussed above in this paper, a sustainable and strategic economic diversification approach could prioritize, inter alia:

(1) Diversification into and within existing non-fossil-fuel sector activities or sectors within their respective economies. These include banking in Bahrain; logistics, the seaports and trade sector in Dubai; the trade sector in Kuwait; and fisheries in Oman.
(2) Introduction of new sectors, industries, or activities with high growth potential such as aviation (airports, airlines, and air transport servicing and logistics), education, tourism and hospitality (such as conference and experiential tourism), finance, real estate, logistics and business services or, within manufacturing, high-technology-content products produced using low- or no-emissions production methods.
(3) Scaling up investment in: (a) the development of public physical and social infrastructure, including education, health care, and basic social protection, as essential foundations for non-oil economy growth, improving labour productivity and lowering production costs; and (b) domestic product and market research into and development of products and services that require low or no emissions.
(4) The implementation of demand-side measures to reduce domestic fossil fuel energy use and the integration of renewable energy (especially solar and wind) into their domestic energy mix to supply rising domestic energy demand and complement and eventually supplant domestic oil or gas use as well as provide a new energy export revenue stream.

To improve the design and implementation of economic diversification strategies, particularly for oil-dependent developing countries, modelling tools are needed that explore sectoral impacts as well as macroeconomic impacts and distributional impacts on workers, individuals and households, and micro and small, medium-sized and large businesses.[162] These tools should help governments identify responses to the following questions in terms of designing and implementing their economic diversification strategies:

- What are the scope and challenges around economic diversification considering national circumstances and the country's long-term sustainable development objectives?[163]

- What kinds of guidelines and case studies could be used in the different regional contexts?
- What are the finance and technology needs that would arise from seeking to promote aspects of economic diversification in responses to measures implemented to address climate change?
- What are the best approaches to ensuring just transition and decent work in responding to the required changes induced as an economy seeks to respond to set(s) of response measures, or more broadly structural transformation?
- The policy literature often highlights the importance of infrastructure, especially energy infrastructure, in attaining economic progress and a diversified economy. In this regard, what are the types of infrastructure investment that would be useful to support economic diversification, including in the energy sector?
- What would be the role of broader integration into and effective participation in global value chains and international markets in supporting economic diversification? Should trade integration be seen as the driver or as the result of economic diversification?
- What governance institutions and regulatory reforms would be needed to support economic diversification efforts?
- What are the support measures that need to be put in place in order to support and equip the domestic population to absorb and benefit from economic diversification efforts?
- What are the measures that need to be put in place to maintain economic, social and political stability during and after economic diversification?

2. Equity-oriented international cooperation arrangements

Addressing the twin development and climate change challenges requires an integrated approach to trade policy, economic diversification, the development of productive capacity, environmental policy, investment policy, and intellectual property policy, among others. This approach should ensure that the overall development approach is "climate-friendly", alleviates poverty, achieves development, and improves standards of living while adapting to and mitigating climate change.

At the international level, governments should pursue international cooperation and support as essential elements to ensure that the national development and economic diversification efforts of developing countries are not undermined or undone. In this regard, there are three key elements for international cooperation and support:[164]

- Ensuring that developing countries' development policy space is not constrained or limited by multilateral rules, particularly in the international trade, investment, finance, and taxation arenas
- Ensuring transfer of environmentally sound and climate-change-related technologies to developing countries
- Ensuring adequate financial support to developing countries for climate change actions, sustainable development, and economic diversification.

A proposed matrix for specific actions that can be considered in relation to the key elements above is as follows:

International Cooperation Element	General Action	Specific Actions
(a) Ensuring developing countries' development policy space	Implementing and enhancing intellectual property right (IPR) flexibilities for environmental goods (including the use of compulsory licensing by developing countries)	To address the problems relating to IPRs in relation to the effective transfer of technology relating to environmental goods to developing countries, leading towards the development in these countries of their endogenous technological base to produce their own environmental goods, the following should be considered: • Ensure that intellectual property rights and agreements, including the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), are not interpreted or implemented in a manner that limits or prevents developing countries from

International Cooperation Element	General Action	Specific Actions
		taking measures to address environmental problems; • Cooperate to establish global pools for environmental goods and technologies to promote effective global environmental action; • Creation and enhancement by developed countries, as well as other countries which deem themselves to be in a position to do so, of appropriate incentives, fiscal or otherwise, to stimulate the transfer of environmentally sound technology by companies from developed countries to developing countries; • Respect and refrain from challenging the use by developing country Members of the full flexibilities contained in the TRIPS Agreement, including compulsory licensing and patent revocation, in particular in cases of refusals to license; • Ensure that the process of providing compulsory licences with respect to environmentally sound technologies under the TRIPS Agreement is made less cumbersome for developing countries; • Adopt and enforce measures to provide differential royalty pricing between firms from developed and developing countries with respect to IPR-protected environmental goods and services, with firms in developing countries being

International Cooperation Element	General Action	Specific Actions
		offered fair and most favourable royalty prices; • Review and amend existing relevant national intellectual property rights regulations in order to remove the barriers and constraints affecting the transfer, absorption, and innovation of technology relating to environmental goods and the provision of environmental services in developing countries; • Promote, through effective national regulations and bilateral, regional, plurilateral or multilateral arrangements, innovative intellectual property rights sharing arrangements for joint development of environmental goods and services among firms in developed and developing countries; • Limit or reduce the minimum period of patent protection on environmental goods, including through appropriate amendment of TRIPS Agreement Article 33; • Prohibit "evergreening" of patents with respect to environmental goods (i.e., prohibit extensions of the effective period of patent protection through the patenting of incremental changes to a previously patented product);

International Cooperation Element	General Action	Specific Actions
		• Developed countries should, in the case of privately owned environmental technologies and services, undertake measures to prevent the abuse of intellectual property rights, including rules with respect to their acquisition through compulsory licensing, with the provision of equitable and adequate compensation; • Developed countries should purchase patents and licences of privately owned environmental technologies and services on commercial terms for their transfer to developing countries on non-commercial terms as part of development cooperation for sustainable development, while taking into account the need to protect intellectual property rights; • Agreement on a waiver of the enforcement of TRIPS Agreement obligations with respect to environmentally sound technologies and climate-related technologies (including a waiver of all IPR royalty payments for these technologies), plus a package of technical assistance and capacity-building support to develop endogenous technologies

International Cooperation Element	General Action	Specific Actions
	Reflecting and operationalizing special and differential treatment for developing countries in international trade agreements	This means that developing countries, including least-developed countries, must have greater flexibility and policy space with respect to their tariff commitments in relation to environmental goods compared with developed countries. This also means that both the quantum and scale of tariff reductions to be undertaken by developing countries must be less as compared with those to be undertaken by developed countries. This is because such policy space in relation to tariff commitments – e.g., the retention of as much space as possible between the bound and applied tariff rates – for developing countries is essential for them to be able to use trade policy in a manner that would be appropriate to their needs and circumstances.
	Explicit prohibition of unilateral trade protectionism, including border adjustment measures, as environmental or climate change response measures	There is great concern that the use of trade measures by developed countries presumably to address environmental concerns (such as climate change) may in fact have the effect of restricting the market access of developing country products in developed countries and of enhancing the competitive edge that developed countries have in global trade. This would damage the trade and development prospects of developing countries and therefore result in the non-achievement of the objective of sustainable development. To address these concerns, there could

International Cooperation Element	General Action	Specific Actions
		be explicit agreement among governments to prohibit unilateral trade measures on environmental grounds that would have an adverse impact on, or discriminate against, the trade of developing countries.
	Ensuring fairer treatment for developing country subsidies	Some developed countries provide their industries with billions of dollars in subsidies for research and development (R&D) of environmental goods. These subsidies create a distinct competitive advantage for developed countries in relation to the production of such goods since developing countries often lack the financial resources to match these developed countries' subsidies. At the same time, developing countries are also constrained by the WTO rules from using many other types of subsidies that had been used by developed countries when the latter were in their development phase. For developing countries, subsidies and other incentives are important tools that can be used to promote economic diversification and sustainable development. Such subsidies should of course be well designed and implemented properly to ensure they meet sustainable development goals. Incentives (subsidies, access to credit, tax breaks, etc.) should be provided to producers and consumers in developing countries to promote good production processes and products (e.g., renewable energy, sustainable agriculture, no-emissions cars) rather than

International Cooperation Element	General Action	Specific Actions
		increased consumption. In this regard, measures implemented by developing countries with a view to achieving legitimate development goals, such as regional growth, technology research and development funding, product diversification and development and implementation of environmentally sound methods of production, should be treated as non-actionable subsidies under WTO subsidies rules.[165]
	Having a "peace clause" on engaging in dispute settlement (including in the WTO) concerning trade-related environmental measures of developing countries and cases involving domestic climate change-related measures by developing countries (such as subsidies to develop domestic green economic sectors) that might be inconsistent with WTO rules	Given the importance of supporting the shift by developing countries to a sustainable development pathway, they may need trade measures to render their environmental policies more effective. These may include, but are not limited to, subsidies as defined under the WTO Agreement on Subsidies and Countervailing Measures. Because of the special needs and circumstances of developing and least-developed countries, especially in the context of their relatively greater vulnerability to the adverse effects of climate change and environmental pollution, greater flexibility should be provided to these countries with respect to the use of such measures. In this regard, establishing a period of due restraint among WTO Members with respect to the use by developing and least-developed countries of such measures would be a useful way of supporting economic diversification and a shift to a sustainable development pathway.

International Cooperation Element	General Action	Specific Actions
(b) Ensuring transfer of environmentally sound and climate-change-related technologies to developing countries	It is now widely recognized that developing countries require significant transfers of finance and technology if they are to implement their Paris Agreement NDCs and make the shift to more equitable and ecologically harmonious and sustainable development. Technology transfer is essential for meeting the human and sustainable development objectives of providing people and enterprises in developing countries with the means to create employment based on principles and practices that are both environmentally sound and economically efficient.	Technology transfer has to be undertaken beyond the commercial arena, and a proactive role of public policy at national and international levels is required to enable developing countries' access to technology, particularly given that technology transfer is not merely the import or purchase of machines and other hardware at commercial rates. A central aspect of technology development and transfer is the building of local capacity so that people and institutions in developing countries can design and make technologies that can be diffused into the domestic economy.[166] The focus should be on real and effective transfer, as provided for in Article 4.5 of the UNFCCC and Article 10 of the Paris Agreement (including financing), of environmentally sound technologies to developing countries using bilateral or other technology transfer and development cooperation programmes to help with technological retrofitting and jumpstart endogenous technology development in developing countries, rather than through tariff and non-tariff liberalization. There are three distinct components of technology that can be transferred: • physical assets, such as plants, machinery, and equipment;

International Cooperation Element	General Action	Specific Actions
		• information, both technical and commercial, relating to process know-how, choice of technology, engineering design and plant construction, organization and operating methods, quality control, and market characteristics; and • human skills, especially those possessed by specialized professionals and engineers. The acquisition and absorption of foreign technologies, and their further development, are complex processes that demand significant knowledge and efforts on the part of those that acquire them.[167] There are two channels of technology transfer: one is via private arrangement, and the other is through government commitment. In terms of the former, technology transfer is conducted by purchase, investment, or royalty agreements for cooperation. In terms of the latter, technology transfer is enforced by the government based on the relevant international agreement. The private sector (particularly patent rights holders) should be prompted by their home governments to participate in effective technology transfers of environmental goods, especially those goods that are IPR-protected, to developing countries through

International Cooperation Element	General Action	Specific Actions
		commercial arrangements (such as trade, investment, joint ventures) or through cost/benefit-sharing arrangements to lessen the cost of the transfer of the technology and to enable a sustainable uptake of the technology by the recipient countries.
(c) Ensuring adequate financial support to developing countries for climate change actions, sustainable development, and economic diversification	Given the fiscal constraints present in many developing countries, international financial support under longstanding commitments from developed countries to do so under the UNFCCC and other multilateral frameworks should be fully implemented and enhanced.	The integration of economic diversification strategies into sustainable development and sustainable trade strategies should be supported. The additional financial support can come in the form of liquidity injections through reallocating Special Drawing Rights (SDRs) at the International Monetary Fund (IMF) and issuing new SDR allocations to developing countries; the cancellation of developing countries' sovereign external debt owed to developed country creditor governments, and restructuring or cancellation of developing countries' debt owed to private sector creditors; supporting and adopting countercyclical fiscal stimulus policies and avoiding the imposition of austerity measures; global and national regulation of financial trading transactions to limit speculation and arrest declines in currency and asset prices; stopping further trade liberalization negotiations; and developing multilateral macroeconomic and financial surveillance mechanisms under the United Nations. At the same time, additional resources could be mobilized domestically in developing countries if the channels

International Cooperation Element	General Action	Specific Actions
		through which scarce financial resources flow out of these countries are restricted – e.g., through the use of capital controls to stem speculative capital outflows, illicit financial flows, sovereign and private debt payments, and payments for luxury consumption imports;[168] the use of progressive tax measures domestically; and strengthening the regulatory power of the state over corporate profiteering activities. The imposition of new "green" conditionalities on the provision of financial support to developing countries should be avoided.

The actions proposed above are important for developing countries to consider given that multilateral policy discussions relating to the interlinkages between climate change, environmental protection, and trade policies have again revived.

Developed countries have tabled comprehensive trade/environment positions and coordinated their positions, notably through G7 trade ministers' meetings. Developing countries, by contrast, do not yet have a coordinated position. Given the potentially adverse impact of some of these initiatives on their policy space and development prospects, developing countries need to discuss trade and environmental issues with the aim of identifying the key areas of concern and interest to them, and better coordinating their positions to develop and push forward a positive and proactive trade and environment agenda that reflects their sustainable development interests.[169]

A genuine effort to have trade policy contribute to a sustainable and just transition to low-carbon development pathways would involve, instead of market-based trade liberalization of environmental goods and services across

the board for all WTO Members, an integrated and development-oriented approach to trade policy, environmental protection, and development, especially in developing countries.

In this context, coordination and solidarity amongst developing countries is especially important.

Finally, to facilitate environmentally sustainable growth in their economies through both national-level actions and collective cooperation, it is important for developing countries to have a proactive positive trade, climate and development sustainability agenda.[170] This can be achieved through:

- **Coordinating positions at the multilateral policy level:**

    - On CBAMs, developing countries should coordinate positions in addressing the impact of the implementation of CBAMs[171] by developed countries. Developing countries should review the compatibility of CBAMs with WTO rules and call for multilateral consultations in the WTO and multilateral discussions at UNCTAD on this issue. They should call on countries imposing CBAMs or other forms of carbon tariffs to be consistent with their commitments under and the principles of the UNFCCC[172] as well as WTO principles and obligations, including historical responsibility and CBDR and special and differential treatment. There should be agreement that unilateral trade protectionist measures cannot be used as environmental or climate change response measures.
    - On trade-related green technology transfer issues, developing countries should propose expanding TRIPS flexibilities for developing countries in relation to climate-related goods and services in the WTO, such as waiving TRIPS enforcement of IPRs applicable to such goods. This is one way in which countries' commitments under the WTO and the UNFCCC and Paris Agreement with respect to technology transfer can be made mutually consistent. Other initiatives to facilitate green technology transfers could include open sourcing of key green technologies and declaring them as public goods; having an agreement to waive the payment of IPR royalties to the patent holders of climate-related

goods; and an agreement to have a moratorium on WTO dispute settlement over cases involving domestic climate-change-related measures by developing countries (such as subsidies to develop domestic green economic sectors) that might be inconsistent with WTO rules. The WTO needs to develop an integrated technology transfer approach which supports technology transfers with funding to support developing countries in identifying, accessing, adapting and implementing the technologies they need to be able to undertake effective and adequate sustainable development and climate change actions, including through the development and dissemination of endogenous technologies.

- On the proposed Environmental Goods Agreement (EGA), developing countries may consider identifying a positive list of environmental goods that they are willing to liberalize and/or a negative list of environmental goods for which they wish to reserve tariff policy space. This list could include substitutes and renewables which are of export interest to developing countries. They could also explore South-South trade and technology cooperation arrangements to facilitate the dissemination of Southern green technologies, while at the same time pushing for continued special and differential treatment for their green technologies to access Northern markets.
- On plastic pollution and environmentally sustainable plastics trade, developing countries could consider having a coordinated position on the plastic industry and trade, including incentivizing trade in environmentally sustainable substitutes of plastics. This should also be coordinated with a unified approach among developing countries in the context of the negotiations for a new global plastics treaty[173] taking place under the auspices of the United Nations.
- On inefficient fossil fuel subsidies, as most developing countries remain heavily dependent on fossil fuels (in terms of production, export, or import for energy use), developing countries can play an important role in encouraging an equitable energy transition and support investments towards renewable energy as a complementary measure to mobilizing climate financing. There is a need to put forward the case that given the high cost to the developing countries of this green transition, they need policy and fiscal space to determine a sustainable pace of transition, as well

as international financing and technology transfer, that can simultaneously advance development and climate goals and protect the most vulnerable in their societies, including through nationally appropriate sustainable economic and energy diversification strategies and policies. Developing countries can play an important role in encouraging green transition and diverting inefficient subsidies from fossil fuels towards renewable energy to simultaneously increase affordable energy access and decrease emissions. Instead of punitive measures, positive incentives can be provided. Key green technologies can be shared amongst developing countries for redirecting their production from use of fossil fuels to clean energy, and financing support for such energy transition and diversification should be provided to developing countries (for example, the provision of climate finance under the UNFCCC and Paris Agreement).

- **Pushing for greater finance flows to developing countries** – Lack of finance is one of the major obstacles to an environmentally sustainable structural transformation. Given the complexities of the international climate finance architecture and its associated challenges, developing countries need additional funds associated with their trade and environment goals. Such additional funds could be sourced through the following:

    - o In addition to pushing for increased climate financing under the UNFCCC and Paris Agreement to ensure that such financing would be commensurate to their needs for climate finance support in the areas of mitigation, adaptation, loss and damage, and economic diversification, developing countries could consider proposing the creation of a dedicated Trade and Environmental Sustainability Fund, to be jointly managed by the UN Environment Programme (UNEP), UNCTAD, and WTO, to support both national green transformation priority areas and regional climate cooperation among developing countries.
    - o Enhancing cooperation among central banks, development banks and regulators to share policies and good practice in cultivating a green bond market and setting common green bond standards wherever appropriate to address greenwashing in financial markets.

- Developing countries could also explore how complementary initiatives to generate additional financial resources could be developed, such as calling for immediate debt payment moratoria and debt cancellation for developing countries' sovereign debt, exploring needed reforms in the global tax system, and pushing for a new allocation of SDRs to developing countries to support economic and energy diversification efforts and their climate actions.

- **Establish informal coordination mechanisms among developing countries to discuss trade, climate, and environmental linkage issues** – Promoting economic growth along with addressing climate change is a shared mission for all developing countries, which should take trade and environmental sustainability issues fully into account in their policy formulation. In future discussions, developing countries may wish to prioritize the above issues and translate some of the recommendations into concrete actions. Given the nature of the issues, the related policy debates may last for years ahead; therefore developing countries should establish informal coordination mechanisms that would enable structured discussions among themselves to develop and push forward coordinated positions and perspectives. Such mechanisms should ideally involve experts and policymakers of the participating countries who are knowledgeable about the issues and are active in representing their respective countries in the WTO, UNCTAD, UNEP, UNFCCC, and Convention on Biological Diversity (CBD).

Endnotes

1 COP26, Glasgow Climate Pact, paras. 17-18; CMA3, Glasgow Climate Pact, paras. 22-23.
2 COP26, Glasgow Climate Pact, para. 20; CMA3, Glasgow Climate Pact, para. 36.
3 CMA3, Glasgow Climate Pact, para. 27.
4 CMA3, Glasgow Climate Pact, para. 28.
5 CMA3, Glasgow Climate Pact, para. 29.
6 CMA3, Glasgow Climate Pact, para. 32.
7 CMA3, Glasgow Climate Pact, para. 31.
8 CMA3, Glasgow Climate Pact, para. 30.
9 CMA3, Glasgow Climate Pact, para. 34.
10 However, even though they were among those most insistent at COP26 on setting up the accelerated pre-2030 mitigation work programme and will likely make this work programme the political focus of the COP and CMA sessions in these next few years, developed countries such as Australia, New Zealand, the US, and the EU look to be among those which will not be updating their respective NDCs in 2022. See, e.g., S Schonhardt, Countries Back Away from Pledge to Update Climate Goals This Year (E&E News, 1 February 2022), at https://www.scientificamerican.com/article/countries-back-away-from-pledge-to-update-climate-goals-this-year/; I Gerretsen, Laggards reject Glasgow Climate Pact's 2022 call for new climate plans (Climate Home News, 15 November 2021), at https://www.climatechangenews.com/2021/11/15/laggards-reject-glasgow-pacts-2022-call-new-climate-plans/; and Z Weise, EU will not strengthen climate action plan in 2022 (Politico, 1 December 2021), at https://www.politico.eu/article/eu-will-not-strengthen-climate-action-plan-in-2022/
11 See https://ukcop26.org/the-conference/cop26-outcomes/
12 For more information about these initiatives, see https://www.wto.org/english/news_e/archive_e/tessd_arc_e.htm; https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/CTE/W249.pdf&Open=True; https://www.wto.org/english/news_e/news21_e/tessd_29mar21_e.htm; https://www.meti.go.jp/press/2020/03/20210322010/20210322010-1.pdf; https://www.mfat.govt.nz/en/trade/free-trade-agreements/trade-and-climate/agreement-on-climate-change-trade-and-sustainability-accts-negotiations/
13 See https://www.wto.org/english/tratop_e/envir_e/ega_e.htm
14 The UN Conference on Trade and Development (UNCTAD) has noted that "these rules may diminish the chances of developing countries to progress on their sustainable development goals, making structural transformation more challenging. Not only will these rules undermine developing countries' structural transformation by raising the cost of industrialisation, limiting their export capacities but will also constrain their budgets for promoting green growth. The push to liberalise trade in environmental goods and services will benefit mainly exporters in the developed countries and constrain the fiscal space of developing countries. Using the OECD's Combined List of Environmental Goods (CLEG), the top five exporters of environmentally related goods were found to be EU, China, US, Japan and Korea with the combined share of top ten exporters estimated at 88% of global exports. Most of the developing countries are net importers of these goods. The [UNCTAD Trade and Development Report 2021] estimates that developing and least developed countries will lose tariff revenue amounting to $15 billion per annum if duty-free imports of these goods are allowed. Furthermore, cheaper imports of these environmental goods will undermine developing countries' capacity to produce these goods, forcing them to remain net importers." See https://thewire.in/world/cop26-climate-goals-international-trading-rules-green-technology; and UNCTAD, Trade and Development Report 2021, p. 138, at https://unctad.org/webflyer/trade-and-development-report-2021

15 The most-cited policy "rationale" for CBAMs is to address competitiveness by preventing "carbon leakage" that results when an emitting industry moves to other countries that have more flexible or "less strict" environmental/climate policy. In doing so, the industry's production costs become lower because it will not have to comply with the more stringent environmental regulations of its former host country. However, the carbon leakage and competitiveness argument downplays and disregards the historical and current patterns of development in industrialized developed countries. Their shift from manufacturing to services over the 1980s to 2000s has "offshored" emissions, resulting in their narrative of reducing greenhouse gas emissions and "decoupling" their economic growth from emissions but ignoring consumption-based embedded emissions arising from international trade of consumer goods and services especially from South to North.

16 See https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12228-Carbon-Border-Adjustment-Mechanism; https://www.wto.org/english/news_e/news20_e/envir_20nov20_e.htm; https://www.wto.org/english/news_e/news21_e/envir_30mar21_e.htm; https://ec.europa.eu/info/sites/default/files/carbon_border_adjustment_mechanism_0.pdf

17 See D Lawder and Reuters, Biden administration to consider carbon border tax as part of trade agenda – USTR (Reuters, 2 March 2021), at https://www.reuters.com/business/environment/biden-administration-consider-carbon-border-tax-part-trade-agenda-ustr-2021-03-01/; K Bolongaro, Canada Says It's Open to Carbon Tariffs Amid Global Climate Push (Financial Post, 12 February 2021), at https://financialpost.com/pmn/business-pmn/canada-says-its-open-to-carbon-tariffs-amid-global-climate-push; K Bolongaro, Biden-Trudeau Climate Plan May Target Polluting Trade Rivals (Bloomberg News, 24 February 2021), at https://www.bloomberg.com/news/articles/2021-02-24/biden-trudeau-climate-plan-may-target-polluting-trade-rivals; and J Shankleman, UK PM to push allies to agree on carbon border taxes: Report (Aljazeera.com, 5 February 2021), at https://www.aljazeera.com/economy/2021/2/5/bb-uk-pm-to-push-allies-to-agree-on-carbon-border-taxes-report

18 See, e.g., TRIPS Agreement, Art. 66.2; UNFCCC, Art. 4.5.

19 I Hascic and M Migotto, Measuring environmental innovation using patent data (OECD Environment Working Papers No. 89, 2015), Tables 4 and 5, pp. 27-28, at https://www.oecd-ilibrary.org/docserver/5js009kf48xw-en.pdf?expires=1634211518&id=id&accname=guest&checksum=EDC08AEF7DF26C9E4CC03A9853655728

20 Based on the OECD Statistical Database at https://stats.oecd.org/ (search for "patents in environment-related technologies"), between 2012 and 2017, 90,762 patents were filed by applicants in OECD countries out of 105,110 patent applications worldwide (86.35%).

21 See H Bucher, J Drake-Brockman, A Kasterine and M Sugathan, Trade in Environmental Goods and Services: Opportunities and Challenges (International Trade Centre Technical Paper, 2014), Figure 3, at https://www.intracen.org/uploadedFiles/intracenorg/Content/Publications/AssetPDF/EGS%20Ecosystems%20Brief%20040914%20-%20low%20res.pdf

22 See GB Asheim et al., The case for a supply-side climate treaty (365:6451 Science 325-327, 26 July 2019), at https://www.science.org/doi/10.1126/science.aax5011; and G Piggot et al., Curbing fossil fuel supply to achieve climate goals (20:8 Climate Policy 881-887, 1 September 2020), at https://www.tandfonline.com/doi/full/10.1080/14693062.2020.1804315

24 D Roberts, Is there any point in trying to restrict fossil fuel supplies? A new paper says yes (Vox, 29 October 2015), at https://www.vox.com/2015/10/29/9638744/fossil-fuel-supply-side-policy; P Zakkour and W Heidug, Supply-Side Climate Policy for Crude Oil Producers: Exploring Policy Pathways for Decarbonizing Fossil Fuels (KAPSARC, August 2020), at https://www.kapsarc.org/file-download.php?i=68494; P Le Billon and B Kristoffersen, Just cuts for fossil fuels? Supply-side carbon constraints and energy transition (52:1 Environment and Planning A, 2019), at https://www.researchgate.net/publication/328890739_Just_cuts_for_fossil_fuels_Supply-side_carbon_constraints_and_energy_transition

[24] D Roberts, It's time to think seriously about cutting off the supply of fossil fuels (Vox, 31 May 2018), at https://www.vox.com/energy-and-environment/2018/4/3/17187606/fossil-fuel-supply; D Roberts, Is there any point in trying to restrict fossil fuel supplies? A new paper says yes (Vox, 29 October 2015), at https://www.vox.com/2015/10/29/9638744/fossil-fuel-supply-side-policy

[25] For example, Ecuador proposed that oil producers impose a carbon tax on their exports. See M Lazarus and H van Asselt, Fossil fuel supply and climate policy: exploring the road less taken (150 Climatic Change 1-13, 2018), at https://link.springer.com/article/10.1007/s10584-018-2266-3

[26] M Lazarus and H van Asselt, Fossil fuel supply and climate policy: exploring the road less taken (150 Climatic Change 1-13, 2018), at https://link.springer.com/article/10.1007/s10584-018-2266-3; M Lazarus et al., Supply-side climate policy: the road less taken (SEI Working Paper 2015-13, 2015), at https://mediamanager.sei.org/documents/Publications/Climate/SEI-WP-2015-13-Supply-side-climate-policy.pdf

[27] P Zakkour and W Heidug, Supply-Side Climate Policy for Crude Oil Producers: Exploring Policy Pathways for Decarbonizing Fossil Fuels (KAPSARC, August 2020), at https://www.kapsarc.org/file-download.php?i=68494 ; see also S Yeo, In-depth: How can fossil fuel supplies be constrained? (CarbonBrief, 28 September 2016), at https://www.carbonbrief.org/how-can-fossil-fuel-supplies-constrained

[28] M Lazarus and H van Asselt, Fossil fuel supply and climate policy: exploring the road less taken (150 Climatic Change 1-13, 2018), at https://link.springer.com/article/10.1007/s10584-018-2266-3/tables/1; M Lazarus et al., Suuply-side climate policy: the road less taken (SEI Working Paper 2015-13, 2015), at https://mediamanager.sei.org/documents/Publications/Climate/SEI-WP-2015-13-Supply-side-climate-policy.pdf; P Zakkour and W Heidug, Supply-Side Climate Policy for Crude Oil Producers: Exploring Policy Pathways for Decarbonizing Fossil Fuels (KAPSARC, August 2020), at https://www.kapsarc.org/file-download.php?i=68494; see also S Yeo, In-depth: How can fossil fuel supplies be constrained? (CarbonBrief, 28 September 2016), at https://www.carbonbrief.org/how-can-fossil-fuel-supplies-constrained

[29] B Prest, The Economic and Emissions Consequences of Supply-Side Reforms to Oil and Gas Production on Federal Lands (16 September 2020), at https://www.resources.org/common-resources/economic-and-emissions-consequences-supply-side-reforms-oil-and-gas-production-federal-lands/. Higher royalties have been proposed in a number of US bills. See, e.g., B Prest, Supply-Side Reforms to Oil and Gas Production on Federal Lands (Resources for the Future Working Paper 20-16, December 2021), at https://media.rff.org/documents/WP_20-16__Dec_2021.pdf

[30] N Gaulin and P Le Billon, Climate change and fossil fuel production cuts: assessing global supply-side constraints and policy implication (20:8 Climate Policy 888-901, 14 February 2020), at https://www.tandfonline.com/doi/full/10.1080/14693062.2020.1725409

[31] M Lazarus and H van Asselt, Fossil fuel supply and climate policy: exploring the road less taken (150 Climatic Change 1-13, 2018), at https://link.springer.com/article/10.1007/s10584-018-2266-3/tables/1; M Lazarus et al., Supply-side climate policy: the road less taken (SEI Working Paper 2015-13, 2015), at https://mediamanager.sei.org/documents/Publications/Climate/SEI-WP-2015-13-Supply-side-climate-policy.pdf

[32] See, e.g., A Elgouacem, Designing fossil fuel subsidy reforms in OECD and G20 countries: A robust sequential approach methodology (OECD Environment Working Paper No. 168, 21 October 2020), at https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV/WKP(2020)15&docLanguage=En

[33] G Piggot et al., Curbing fossil fuel supply to achieve climate goals (20:8 Climate Policy 881-887, 1 September 2020), at https://www.tandfonline.com/doi/full/10.1080/14693062.2020.1804315

[34] R Mendelevitch, Supply-side climate policies for the international steam coal market: Can they curb coal consumption? (2018), at https://www.strommarkttreffen.org/2018-01_Mendelevitch_Supply-side_climate_policies_for_coal.pdf

[35] "Governments subsidize fossil fuel exploration and extraction to the order of 18 to 70 billion per year, depending on how subsidies are defined. . . By reducing the costs of finding and developing new oil fields and by increasing net revenues for the fuels extracted, these subsidies affect the economics of fossil fuel extraction; in the USA, for example, half of all oil production from new fields may depend on subsidies to be profitable." See M Lazarus and H van Asselt, Fossil fuel supply and climate policy: exploring the road less taken (150 Climatic Change 1-13, 2018), at https://link.springer.com/article/10.1007/s10584-018-2266-3. See also M Lazarus et al., Supply-side climate policy: the road less taken (SEI Working Paper 2015-13, 2015), at https://mediamanager.sei.org/documents/Publications/Climate/SEI-WP-2015-13-Supply-side-climate-policy.pdf; and P Newell, Towards a fossil fuel non-proliferation treaty (20:8 Climate Policy 1043-1054, 8 July 2019), at https://www.tandfonline.com/doi/full/10.1080/14693062.2019.1636759?src=recsys

[36] M Lazarus and H van Asselt, Fossil fuel supply and climate policy: exploring the road less taken (150 Climatic Change 1-13, 2018), at https://link.springer.com/article/10.1007/s10584-018-2266-3; N Gaulin and P Le Billon, Climate change and fossil fuel production cuts: assessing global supply-side constraints and policy implications (20:8 Climate Policy 888-901, 14 February 2020), at https://www.tandfonline.com/doi/full/10.1080/14693062.2020.1725409

[37] M Lazarus and H van Asselt, Fossil fuel supply and climate policy: exploring the road less taken (150 Climatic Change 1-13, 2018), at https://link.springer.com/article/10.1007/s10584-018-2266-3; P Zakkour and W Heidug, Supply-Side Climate Policy for Crude Oil Producers: Exploring Policy Pathways for Decarbonizing Fossil Fuels (KAPSARC, August 2020), at https://www.kapsarc.org/file-download.php?i=68494. One example is the system of oil production quotas in the Organization of the Petroleum Exporting Countries (OPEC); see M Lazarus et al., Supply-side climate policy: the road less taken (SEI Working Paper 2015-13, 2015), at https://mediamanager.sei.org/documents/Publications/Climate/SEI-WP-2015-13-Supply-side-climate-policy.pdf

[38] P Zakkour and W Heidug, Supply-Side Climate Policy for Crude Oil Producers: Exploring Policy Pathways for Decarbonizing Fossil Fuels (KAPSARC, August 2020), at https://www.kapsarc.org/file-download.php?i=68494

[39] P Zakkour and W Heidug, Supply-Side Climate Policy for Crude Oil Producers: Exploring Policy Pathways for Decarbonizing Fossil Fuels (KAPSARC, August 2020), at https://www.kapsarc.org/file-download.php?i=68494

[40] For example, restrictions on leases of state-owned lands and waters for oil/coal/gas development are cited in M Lazarus and H van Asselt, Fossil fuel supply and climate policy: exploring the road less taken (150 Climatic Change 1-13, 2018), at https://link.springer.com/article/10.1007/s10584-018-2266-3/tables/1. See also P Zakkour and W Heidug, Supply-Side Climate Policy for Crude Oil Producers: Exploring Policy Pathways for Decarbonizing Fossil Fuels (KAPSARC, August 2020), at https://www.kapsarc.org/file-download.php?i=68494; M Lazarus et al., Supply-side climate policy: the road less taken (SEI Working Paper 2015-13, 2015), at https://mediamanager.sei.org/documents/Publications/Climate/SEI-WP-2015-13-Supply-side-climate-policy.pdf; and B Prest, The Economic and Emissions Consequences of Supply-Side Reforms to Oil and Gas Production on Federal Lands (16 September 2020), at https://www.resources.org/common-resources/economic-and-emissions-consequences-supply-side-reforms-oil-and-gas-production-federal-lands/

[41] M Lazarus and H van Asselt, Fossil fuel supply and climate policy: exploring the road less taken (150 Climatic Change 1-13, 2018), at https://link.springer.com/article/10.1007/s10584-018-2266-3/tables/1; P Zakkour and W Heidug, Supply-Side Climate Policy for Crude Oil Producers:

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42 S Yeo, In-depth: How can fossil fuel supplies be constrained? (CarbonBrief, 28 September 2016), at https://www.carbonbrief.org/how-can-fossil-fuel-supplies-constrained

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44 N Gaulin and P Le Billon, Climate change and fossil fuel production cuts: assessing global supply-side constraints and policy implication (20:8 Climate Policy 888-901, 14 February 2020), at https://www.tandfonline.com/doi/full/10.1080/14693062.2020.1725409; M Lazarus and H van Asselt, Fossil fuel supply and climate policy: exploring the road less taken (150 Climatic Change 1-13, 2018), at https://link.springer.com/article/10.1007/s10584-018-2266-3/tables/1; M Lazarus et al., Supply-side climate policy: the road less taken (SEI Working Paper 2015-13, 2015), at https://mediamanager.sei.org/documents/Publications/Climate/SEI-WP-2015-13-Supply-side-climate-policy.pdf

45 I.e., a temporary ban which has an end date.

46 E.g.:

– US bans on deep water oil and gas drilling (after the Deepwater Horizon oil spill; see B Prest, The Economic and Emissions Consequences of Supply-Side Reforms to Oil and Gas Production on Federal Lands (16 September 2020), at https://www.resources.org/common-resources/economic-and-emissions-consequences-supply-side-reforms-oil-and-gas-production-federal-lands/) and European Parliament support for moratorium on hydraulic fracturing (fracking) for shale gas (see M Lazarus et al., Supply-side climate policy: the road less taken (SEI Working Paper 2015-13, 2015), at https://mediamanager.sei.org/documents/Publications/Climate/SEI-WP-2015-13-Supply-side-climate-policy.pdf)

– bans on new oil and gas exploration in French 2017 climate plan, New Zealand and Costa Rica (which has banned oil extraction since 2002; see G Piggot et al., Curbing fossil fuel supply to achieve climate goals (20:8 Climate Policy 881-887, 1 September 2020), at https://www.tandfonline.com/doi/full/10.1080/14693062.2020.1804315), oil moratoria in parts of Mexico (see G Piggot et al., Curbing fossil fuel supply to achieve climate goals (20:8 Climate Policy 881-887, 1 September 2020), at https://www.tandfonline.com/doi/full/10.1080/14693062.2020.1804315) and in Belize; see M Lazarus and H van Asselt, Fossil fuel supply and climate policy: exploring the road less taken (150 Climatic Change 1-13, 2018), at https://link.springer.com/article/10.1007/s10584-018-2266-3; A Elgouacem, Designing fossil fuel subsidy reforms in OECD and G20 countries: A robust sequential approach methodology (OECD Environment Working Paper No. 168, 21 October 2020), at https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV/WKP(2020)15&docLanguage=En; and G Piggot et al., Curbing fossil fuel supply to achieve climate goals (20:8 Climate Policy 881-887, 1 September 2020), at https://www.tandfonline.com/doi/full/10.1080/14693062.2020.1804315

– Spain's proposed new climate law to ban all new fossil fuel projects; see G Piggot et al., Curbing fossil fuel supply to achieve climate goals (20:8 Climate Policy 881-887, 1 September 2020), at https://www.tandfonline.com/doi/full/10.1080/14693062.2020.1804315

– the Irish government's pledge to end new oil and gas exploration and extraction licences; see G Piggot et al., Curbing fossil fuel supply to achieve climate goals (20:8 Climate Policy 881-887, 1 September 2020), at https://www.tandfonline.com/doi/full/10.1080/14693062.2020.1804315

– Chinese and US temporary moratoria on permits for new coal mines and proposal by some Pacific island nations for an international moratorium on new coal mines etc.; see M Lazarus and

H van Asselt, Fossil fuel supply and climate policy: exploring the road less taken (150 Climatic Change 1-13, 2018), at https://link.springer.com/article/10.1007/s10584-018-2266-3. China would stop approving coal mines for three years: see S Yeo, In-depth: How can fossil fuel supplies be constrained? (CarbonBrief, 28 September 2016), at https://www.carbonbrief.org/how-can-fossil-fuel-supplies-constrained. The US would stop new coal mining on public land for three years affecting 50 pending leases; https://www.theguardian.com/environment/2016/jan/15/obama-administration-halts-new-coal-mining-leases-on-public-land

– US President Joe Biden ordered an indefinite pause on new federal oil and gas leases and US bills have been proposed for a moratorium on leases; see B Prest, Supply-Side Reforms to Oil and Gas Production on Federal Lands (Resources for the Future Working Paper 20-16, December 2021), at https://media.rff.org/documents/WP_20-16__Dec_2021.pdf

– moratoria on fracking in "France, Germany, Ireland, Wales, Scotland and Uruguay, and hundreds of subnational jurisdictions"; see P Newell, Towards a fossil fuel non-proliferation treaty (20:8 Climate Policy 1043-1054, 8 July 2019), at https://www.tandfonline.com/doi/full/10.1080/14693062.2019.1636759?src=recsys

– near-term timetables have been set for the phasing out of fossil fuels (especially coal) by the UK, Spain, China etc.; see P Newell, Towards a fossil fuel non-proliferation treaty (20:8 Climate Policy 1043-1054, 8 July 2019), at https://www.tandfonline.com/doi/full/10.1080/14693062.2019.1636759?src=recsys

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49 N Gaulin and P Le Billon, Climate change and fossil fuel production cuts: assessing global supply-side constraints and policy implications (20:8 Climate Policy 888-901, 14 February 2020), at https://www.tandfonline.com/doi/full/10.1080/14693062.2020.1725409; P Zakkour and W Heidug, Supply-Side Climate Policy for Crude Oil Producers: Exploring Policy Pathways for Decarbonizing Fossil Fuels (KAPSARC, August 2020), at https://www.kapsarc.org/file-download.php?i=68494

50 M Lazarus and H van Asselt, Fossil fuel supply and climate policy: exploring the road less taken (150 Climatic Change 1-13, 2018), at https://link.springer.com/article/10.1007/s10584-018-2266-3/tables/1; M Lazarus et al., Supply-side climate policy: the road less taken (SEI Working Paper 2015-13, 2015), at https://mediamanager.sei.org/documents/Publications/Climate/SEI-WP-2015-13-Supply-side-climate-policy.pdf

51 A climate test for new oil infrastructure found only a 5% probability that investments in expansion of oil sands capacity would be viable under a 2°C constraint. See M Lazarus and H van Asselt, Fossil fuel supply and climate policy: exploring the road less taken (150 Climatic Change 1-13, 2018), at https://link.springer.com/article/10.1007/s10584-018-2266-3

52 See G Piggot et al., Curbing fossil fuel supply to achieve climate goals (20:8 Climate Policy 881-887, 1 September 2020), at https://www.tandfonline.com/doi/full/10.1080/14693062.2020.1804315

53 Withdrawal or exclusion of funds/assets

54 M Lazarus and H van Asselt, Fossil fuel supply and climate policy: exploring the road less taken (150 Climatic Change 1-13, 2018), at https://link.springer.com/article/10.1007/s10584-018-2266-3. For example, Norway's sovereign wealth fund has divested from coal stocks and Ireland's Parliament has voted to require its sovereign wealth fund to divest from all fossil fuel stocks; see

P Newell, Towards a fossil fuel non-proliferation treaty (20:8 Climate Policy 1043-1054, 8 July 2019), at https://www.tandfonline.com/doi/full/10.1080/14693062.2019.1636759?src=recsys

55 N Gaulin and P Le Billon, Climate change and fossil fuel production cuts: assessing global supply-side constraints and policy implication (20:8 Climate Policy 888-901, 14 February 2020), at https://www.tandfonline.com/doi/full/10.1080/14693062.2020.1725409

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57 B Prest, The Economic and Emissions Consequences of Supply-Side Reforms to Oil and Gas Production on Federal Lands (16 September 2020), at https://www.resources.org/common-resources/economic-and-emissions-consequences-supply-side-reforms-oil-and-gas-production-federal-lands/; B Prest, Supply-Side Reforms to Oil and Gas Production on Federal Lands (Resources for the Future Working Paper 20-16, December 2021), at https://media.rff.org/documents/WP_20-16__Dec_2021.pdf

58 See N Gaulin and P Le Billon, Climate change and fossil fuel production cuts: assessing global supply-side constraints and policy implication (20:8 Climate Policy 888-901, 14 February 2020), at https://www.tandfonline.com/doi/full/10.1080/14693062.2020.1725409. Examples of such decisions include:

– court decision stopping planned coal mine because of climate change impacts; see M McGowan and L Cox, Court rules out Hunter Valley coalmine on climate change grounds (The Guardian, 7 September 2019), at https://www.theguardian.com/australia-news/2019/feb/08/court-rules-out-hunter-valley-coalmine-climate-change-rocky-hill (the mining company did not appeal: S Maunder et al., Rocky Hill open cut coal mine "dead in the water" after Gloucester Resources abandons appeal option (ABC News, 9 May 2019), at https://www.abc.net.au/news/2019-05-09/rocky-hill-coal-mine-dead-as-company-abandons-appeal/11095326)

– revoking permit for German coal mine; see G Piggot et al., Curbing fossil fuel supply to achieve climate goals (20:8 Climate Policy 881-887, 1 September 2020), at https://www.tandfonline.com/doi/full/10.1080/14693062.2020.1804315

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61 UNFCCC, Art. 3.4 and 3.5.

62 UNFCCC, Art. 4.8 and 4.10.

63 UNFCCC, Art. 10.

64 See UNFCCC, at http://unfccc.int/cooperation_support/response_measures/items/7475.php

65 K Bond and S Butler-Sloss, The IEA Calls Time on the Fossil Fuel Era (Carbon Tracker, 14 October 2021), at https://carbontracker.org/the-iea-calls-time-on-the-fossil-fuel-era/

66 Carbon Tracker, Petrostates need to bridge $9 trillion income gap in energy transition (Carbon Tracker, 11 February 2021), at https://carbontracker.org/petrostates-13-trillion-gap-energy-transition-pr/; Carbon Tracker, Beyond Petrostates: The burned need to cut oil dependency in the energy transition (Carbon Tracker, 11 February 2021), at https://carbontracker.org/reports/petrostates-energy-transition-report/. The $13 trillion figure for lost revenue is compared with what Carbon Tracker calls "business as usual" expectations of continued growth. It includes countries whose economies are not dominated by oil, such as the UK, the US, India and China. See A Walker, Shift to green energy "could cost oil states $13 trillion" by 2040 (BBC, 1 November 2021), at https://www.bbc.com/news/business-56017415

[67] International Energy Forum, Comparative Analysis of Monthly Reports on the Oil Market (IEF, 25 January 2022), at https://www.ief.org/news/comparative-analysis-of-monthly-reports-on-the-oil-market-23

[68] See, e.g., IPCC, Climate Change 2022: Impacts, Adaptation, and Vulnerability (Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, 2022), at https://www.ipcc.ch/report/ar6/wg2/

[69] Paris Agreement, Art. 4.7.

[70] Paris Agreement, Art. 7.9(e).

[71] A Michaelowa et al., Mitigation co-benefits of adaptation actions and economic diversification (2018), p. 2.

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134 For example, governments at COP26 in November 2021 in Glasgow recognized that limiting global warming to 1.5°C requires rapid, deep and sustained reductions in global greenhouse gas emissions, including reducing global carbon dioxide emissions by 45% by 2030 relative to the 2010 level and to net zero around mid-century, as well as deep reductions in other greenhouse gases, and that this requires accelerated action in this critical decade, on the basis of the best available scientific knowledge and equity, reflecting common but differentiated responsibilities and respective capabilities, in the light of different national circumstances and in the context of sustainable development and efforts to eradicate poverty. In this context, governments were called upon to "accelerate the development, deployment and dissemination of technologies, and the adoption of policies, to transition towards low-emission energy systems, including by rapidly scaling up the deployment of clean power generation and energy efficiency measures, including accelerating efforts towards the phasedown of unabated coal power and phase-out of inefficient fossil fuel subsidies, while providing targeted support to the poorest and most vulnerable in line with national circumstances and recognizing the need for support towards a just transition." See COP26, Glasgow Climate Pact, paras. 17-18, 20, at https://unfccc.int/sites/default/files/resource/cop26_auv_2f_cover_decision.pdf; and CMA3, Glasgow Climate Pact, paras. 22-23, 36, at https://unfccc.int/sites/default/files/resource/cma3_auv_2_cover%20decision.pdf

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[169] See UNCTAD, UNCTAD's proposed agenda on Trade and Environment (forthcoming, 2022).

[170] For more details and discussion on a proactive agenda for developing countries with respect to these issues, please see UNCTAD, UNCTAD's proposed agenda on Trade and Environment (forthcoming, 2022).

[171] UNCTAD estimates that the EU's CBAM will reduce global carbon emissions by not more than 0.1% but will decrease global real income by $3.4 billion, with developed countries' incomes rising by $2.5 billion while developing countries' incomes fall by $5.9 billion. Middle-income developing countries such as Egypt, as well as high-income developing countries such as Saudi Arabia, will be amongst the top 20 countries most affected, with their real incomes falling per annum by $391 million and $1.4 billion respectively. See UNCTAD, A European Union Carbon Border Adjustment Mechanism: Implications for developing countries (2021), at https://unctad.org/system/files/official-document/osginf2021d2_en.pdf

[172] See UNFCCC, Art. 3 and 4, at https://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf

[173] See United Nations, Nations sign up to end global scourge of plastic pollution (2 March 2022), at https://news.un.org/en/story/2022/03/1113142

ECONOMIC DIVERSIFICATION FROM OIL DEPENDENCY: PRACTICE AND LESSONS FROM PERSIAN GULF OIL-DEPENDENT DEVELOPING COUNTRIES

A key need in tackling climate change is the shift of a country's income sources away from vulnerable towards low-emission, climate-resilient sectors. The challenge of economic diversification is however especially pronounced for developing countries reliant on production and export of oil and other fossil fuels for revenue. Drawing on the experience of oil-dependent countries from the Persian Gulf region, this paper highlights the importance of strategic and proactive national development policies to drive structural economic transformation. Additionally, international cooperation through financial support, technology transfer and conducive multilateral rules is also required to promote the transition to a climate-friendly development pathway.

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