Towards A More Inclusive G7 Climate Club

Edward B. Barbier, University Distinguished Professor, Department of Economics, Colorado State University, United States

Abstract

This policy brief outlines a strategy for the Group of Seven (G7) to reduce over-reliance on fossil fuels and promote a transition to clean energy through designing a more inclusive Climate Club. Further details and analysis supporting this strategy can be found in Barbier (2023). At its core are three policies that the G7 can implement over the next few years and at low additional cost: phasing out any remaining consumption and production fossil fuel subsidies; phasing in improved carbon pricing and other policy actions, and recycling revenues to public support for green R&D, key green infrastructure investments and offsetting adverse income and employment effects. Adoption of this policy agenda by all members should be the basis for forming the G7 Climate Club. But to further accelerate global climate action toward the 2050 net-zero goal, the Club should include mechanisms that would encourage other countries to join, including emerging market and developing economies (EMDEs). To achieve these objectives, the Club should require fossil fuel pricing reforms as the main precondition for joining, establish a differentiated carbon price floor, which is lower for EMDEs as opposed to high-income members, and impose a carbon import levy to support the policies adopted by the Club and to encourage more countries to join. Finally, the G7 should target assistance to EMDEs that help them transition to clean energy as well as facilitate their eventual participation in the Climate Club.
Introduction

The G7 economies are at an important crossroads in fostering a low-carbon transition.

The G7 should be at the forefront of collective action to address this challenge. The G7 accounts for over half of global gross domestic product (GDP) (constant 2015 US$), 28% of carbon dioxide emissions from fossil fuels, and 13% of the world’s population. A low-carbon transition by the G7 economies would have a significant impact on achieving net-zero emissions by 2050 and limiting warming to less than 2°C. Reducing fossil fuel use would also make these economies more sustainable, reduce reliance on energy from more authoritarian states, and promote a just transition to energy independence and security.

Yet, the G7 have struggled to green their economies. Over 2020–2021, the G7 economies consistently implemented a higher proportion of “green” measures as part of their recovery and stimulus spending during the COVID-19 pandemic (Johnstone 2022). But green spending was a small share of overall expenditure during the pandemic (O’Callaghan et al. 2021). Large amounts...
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of the stimulus supported greater production and use of fossil fuels and greenhouse gas (GHG) emissions by the G7 (Dufour et al. 2021; Nahm, Miller, and Urpelainen 2022). In addition, the effectiveness of short-term green spending in fostering a low-carbon transition in the G7 and other developed economies is questionable, unless they are also committed to end the underpricing of fossil fuels (Barbier 2020, 2022a; IEA 2021; IMF 2021; Stern 2021).

This policy brief outlines a collective strategy for reducing overreliance on fossil fuels and promoting a transition to clean energy as well as encouraging other economies to follow suit. This strategy is based around instigating a set of policies with the aim of designing a more inclusive Climate Club. Further details on these policies and the analysis supporting this strategy can be found in Barbier (2023). The purpose of this brief is to summarize the key elements of the strategy, which are depicted in Figure 1.

G7 Policies for a Green Transition

At the core of the strategy is a set of green transition policies that all G7 members should agree to adopt. These three policies can be implemented immediately at a low additional cost. They include:

- Phasing out any remaining consumption and production fossil fuel subsidies.
- Phasing in improved carbon pricing and other policy actions.
- Recycling revenues to public support for green R&D, key green infrastructure investments and offsetting adverse income and employment effects.

The first two policies address the most significant market disincentive for a green transition, which is the persistent underpricing of fossil fuels. Such underpricing perpetuates dependency on fossil fuels, produces excessive GHG emissions and other harmful pollutants, and discourages technical innovation and adoption necessary to achieve a low-carbon economy (Barbier 2020, 2022a; Helm 2015; IEA 2021; Parry, Black, and Vernon 2021).

Based on the estimates of Parry, Black, and Vernon (2021), it is possible to calculate the underpricing of fossil fuels for the G7 economies in 2020 (see Barbier 2023, Table 1). For example, fossil fuel subsidies in the G7 amount to $63 billion per year, which is 0.1% of the aggregate GDP of these economies and averages $62 per person. This comprises 14% of fossil fuel subsidies globally ($455 billion). However, fossil fuel subsidies are only part of the costs to economies of underpricing. When the additional social costs of global warming, local pollution, congestion, road accidents, and lost revenue from undercharging are added in, the total costs of underpricing fossil fuels in the G7 are nearly $1.2 trillion annually, 2.8% of GDP, and $1,186 per person (see Barbier 2023, Table 1). Underpricing in the G7 comprises around 20% of the global total of $5.9 trillion, but underpricing per person in the G7 is substantially higher than for the world average, which is $755 per person.

The G7 countries could phase out fossil fuel subsidies in just a few years. One proposal suggests that the G7 could collectively do so by 2025 (Stern 2021). Subsidy removal is urgently needed for a green transition to occur. For example, the International Energy Agency (IEA) argues that the persistence of fossil fuel subsidies in all economies, but especially in major economies such as the G7, is a major “roadblock” to their clean energy transition (IEA 2021). Such subsidies are considered the main deterrent to significant growth in the renewable share of total energy use and helped spur the post-pandemic surge in fossil fuel consumption and GHG emissions (REN21 2022).
Although a number of G7 economies have employed carbon taxes, emissions trading schemes, or both instruments to help limit GHG emissions and other environmental costs associated with fossil fuel use, both carbon pricing and its coverage of GHG emissions must improve in the G7.\(^1\) To be on track for the 2050 net-zero emissions goal, high-income and large emitters, such as the G7, should, at minimum, attain carbon pricing levels of $75 per tonne of carbon dioxide equivalent (tCO\(_2\)e) accompanied by other policies and regulations to reduce emissions (Black et al. 2022; Chateau, Jaumette, and Schwerhoff 2022; Parry, Black, and Roaf 2021). Postponing this step any longer could be detrimental to climate goals. Delaying action on carbon pricing by 10 years would likely result in missing the 2050 net-zero emissions target by a large margin (IMF 2021).

Ending the underpricing of fossil fuels in the G7 economies would not only remove a major market disincentive to the clean energy transition but also raise substantial revenue for these economies. How the G7 governments choose to spend these additional funds is also critical to spurring the transition to net-zero emissions and overcoming any adverse impacts on vulnerable populations, economic sectors, and regions. There are complementary policies and investments that the G7 could address through recycling revenues from fossil fuel pricing reforms:

- Boosting public sector support for green research and development (R&D) leading to innovation.
- Investing in other key green infrastructure needs, such as clean energy and transport and nature-based solutions.
- Offsetting any adverse income and employment effects of a clean energy transition.

**Public Support for Green R&D**

Underinvestment in green innovation is a major obstacle to the development of a low-carbon economy. A private investor bears the full costs of financing R&D and may improve its own technologies and products as a result, but the investor receives little or no returns from the subsequent spread of these innovations throughout the economy. The consequence is that, as public support wanes, private firms and industries routinely underinvest in R&D and there is less economy-wide innovation overall.

These challenges "exist in general for all kinds of new technologies, whether they are of the green or dirty kind. However, their novelty, their highly experimental nature, and the substantial risks involved for pioneer entrepreneurs suggest green technologies may be particularly prone to these failures" (Rodrik 2014, p.470). Such market disincentives have proven to be a significant deterrent to clean energy innovation and development in the G7 economies. Even among major economies that are competitive leaders in green industries, economy-wide green innovation falls well short of the level necessary to generate a transition from fossil fuel dependency (Andres and Mealy 2021; Based on the World Bank’s Carbon Pricing Dashboard [https://carbonpricingdashboard.worldbank.org/map_data](https://carbonpricingdashboard.worldbank.org/map_data) (accessed 10 April 2023). Barbier (2023, Table 2) provides further details on the national carbon pricing initiatives in the G7.

Barbier 2020, 2022a; Black et al. 2022; Fankhauser et al. 2013; IEA 2021; IMF 2021; Rodrik 2014). Consequently, one important use in the G7 economies of the revenues recycled from fossil fuel reforms is to address the lack of sufficient public sector support for green R&D leading to innovation. These include R&D subsidies, public investments, intellectual property protection, and other initiatives to spur more widespread clean energy innovation by businesses.

Another benefit of increasing public R&D support for clean energy and other environmentally related technologies is that it helps reduce the costs of adoption of these innovations throughout the economy (Barbier 2020 and 2022a; Black et al. 2022; IEA 2021; Gillingham and Stock 2018). Public expenditures targeted at clean energy R&D will lead to lower costs and wider adoption as the technology becomes more familiar, innovation spreads, and production scales up (Gillingham and Stock 2018). The result is lower economy-wide costs for adopting such technologies and a reduction in the costs of replacing fossil fuels with clean energy, leading to a more rapid fall in greenhouse gas emissions and a higher likelihood of attaining 2050 net-zero goals (Black et al. 2022; IEA 2021; IMF 2021).

**Green Infrastructure Needs**

Additional public support and investments may be critical for overcoming key bottlenecks to green structural transformation of G7 economies (Barbier 2020, 2022a). One obstacle is inadequate transmission infrastructure for renewable energy. This can only be addressed through public investments to design and construct a “smart” electrical grid transmission system that can integrate diffuse and conventional sources of supply. Government support may also be necessary to develop regional and national networks of charging stations to facilitate the rapid adoption of electric vehicles. For example, purchases of electric vehicles will stimulate demand for charging stations, which once installed, will reduce the costs of running electric vehicles and further boost demand (Gillingham and Stock 2018). Another priority is improved urban development through combining municipal planning and transport policies for more sustainable cities. Finally, public investment in mass transit systems, both within urban areas and major routes connecting cities, has been a long-neglected aspect of public infrastructure development.

Public policies and investments to support nature-based solutions are also important. These are broadly defined as actions to conserve, sustainably manage, and restore natural or modified ecosystems, which also enhance their ability to retain or absorb more carbon. Through restoring landscapes, halting land use change, increasing soil carbon levels, and enhancing wetlands and other ecosystems, nature-based solutions (NBS) are increasingly considered cost-effective investments for mitigating greenhouse gas emissions from land use in temperate G7 regions (Barbier 2020, 2022a; EASAC 2019; Fargione et al. 2018; Griscom et al. 2017). For example, the United States could abate 299 million tonnes CO2e of greenhouse gas emissions annually through NBS, which

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2 See Barbier (2023) for further details on recent trends for key indicators that show that the lack of a substantial boost in public support for clean energy and other green R&D in the G7 is occurring just at a time when new technology developments are needed to drive the energy transition of the world economy. The result has been a drop-off in green innovation within the G7 as well as a diminishing contribution of these economies to global green technologies.
would also provide other benefits, such as air and water filtration, flood control, soil conservation, and wildlife habitats (Fargione et al. 2018). For Europe as well, afforestation, reforestation, and other nature-based solutions have been found to be “the least costly and most easily deployable existing” carbon-dioxide removal investments (EASAC 2019, p.4).

**Offsetting Employment and Income Impacts**

Another important use of the revenues recycled from fossil fuel reforms is to offset any adverse income or employment effects of a clean energy transition. The complementary policies adopted for this goal can be designed as part of the pricing reforms. For example, the Canadian province of British Colombia designed its carbon tax to be revenue-neutral, using any funds raised to reduce corporate and personal income taxes and target income and tax credits to low-income households (Metcalf 2019; Yamazaki 2017).

Other possible options are to recycle revenues to lessen payroll taxes, pay annual dividends to households, raise the minimum wage, provide payments or retraining for displaced workers, and reduce burdens for vulnerable households affected by the green transition (Barbier 2020, 2022a; Klenert et al. 2018). One approach would be to hire displaced workers from the fossil fuel industry to plug abandoned and orphaned oil and gas wells, which would also reduce GHG emissions. During the pandemic, Canada carried out a $1.7 billion scheme for such a program as part of its recovery spending (Raimi, Nerurkar, and Bordoff 2020).

Targeted approaches aimed at the more vulnerable and low-income households could also be effective (Ari et al. 2022; Goulder et al. 2019). Evidence from Europe of the energy price surge after the Russian invasion of Ukraine suggests that the most effective, as well as efficient policies, provide vulnerable households with income support without distorting the marginal price they pay for energy (Ari et al. 2022). In the United States, inflation-indexed transfers targeted to households in the lowest income quintile avoid what otherwise would be regressive overall impacts of any carbon tax by providing additional nominal transfers to compensate for the higher overall consumer prices induced by the tax (Goulder et al. 2019).

**G7 Climate Club**

At its 2022 summit in Germany, the G7 agreed to form a Climate Club Task Force with the expectation of a full launch in 2023 to coincide with the 2023 United Nations Climate Change Conference of the Parties (COP28). According to the G7, “the Climate Club’s initial scope will be on unlocking the potential for the decarbonisation of hard-to-abate industrial sectors” (G7 2022, p.1).

As outlined by Nordhaus (2015), to effectively achieve its objectives, a club must contain two policy mechanisms: participants must agree to a target carbon price, and the Club must impose penalties on non-participating countries.

Any G7 Climate Club should strive to create these two policy mechanisms. In addition, the club must support the main G7 policy actions at the core of the green transition strategy, while at the
same time provide incentives for other countries, including emerging markets and developing economies (EMDEs), to join. These objectives can be achieved in the following manner.

First, the G7 should stipulate that the adoption of fossil fuel pricing reforms as the main precondition for joining its proposed Climate Club. To form the Club initially, all G7 members should agree to begin phasing out fossil fuel subsidies and a schedule for phasing in carbon pricing. Other countries wishing to join the Club should also agree to such policies as preconditions.

Second, the G7 Climate Club should agree to implement policies that would establish a carbon price floor among all members, ideally by 2030, if not sooner. The price floor should be differentiated, lower for emerging markets and developing countries that join the Club and higher for developed economies, such as the G7 and other high-income countries (Parry, Black, and Rauf 2021). Participants in the Club should be allowed flexibility in achieving the price floor through either carbon pricing or the equivalent non-pricing policies (e.g., regulations and sub-national commitments). Initially, the carbon price floor should be established for power generation and emissions-intensive and trade-exposes (EITE) industries, such as cement, iron, steel, and chemicals, and progressively extended to other sectors and sources of emissions. Countries may also aim for prices above the minimum price floor to achieve more ambitious mitigation pledges and targets.

To encourage other countries joining the G7 Climate Club, the carbon price floor should be differentiated. Researchers at the International Monetary Fund (IMF) have recommended a 2030 price floor of $75 per tonne of carbon for high-income countries, $50 per tonne for middle-income economies, and $25 per tonne for low-income countries (Black et al. 2022; Chateau, Jaumotte, and Schwerhoff 2022; Parry, Black, and Roaf 2021). Such a differentiated price floor is also more progressive in terms of emissions reductions among club members, as it will induce proportionally more carbon mitigation by high-income countries (Chateau, Jaumotte, and Schwerhoff 2022).

Third, to incentivize more nonparticipants to join, to minimize competitiveness losses of its exposed EITE sectors, and to reduce carbon leakage, the G7 Climate Club will need to impose a carbon import levy. This is a charge on the carbon embodied in imports from regions without carbon pricing that are equivalent to the Club's differentiated minimum pricing floor levels of $75 per tonne of carbon for high-income countries, $50 per tonne for middle-income economies, and $25 per tonne for low-income countries. Such a border carbon adjustment is necessary to protect the competitiveness of EITE industries of G7 Climate Club participants as well as to safeguard their willingness to pursue collective policy actions (Böhringer et al. 2022; Chateau, Jaumotte, and Schwerhoff 2022; Hagen and Schneider 2021; Tagliapietra and Wolff 2021).

Assistance to Emerging Market and Developing Economies

As part of its collective strategy, the G7 should also consider how best to encourage greater climate change mitigation and adaptation in EMDEs. Such assistance could also help EMDEs adopt the necessary policies and infrastructure investments to participate in the G7 Climate Club. The ultimate aim should be that EMDEs eventually pursue a similar strategy as the G7, but they should
proceed cautiously with some policies, such as implementing fossil fuel pricing reforms, and they may need to pursue additional actions compatible with their development and poverty objectives.

To achieve these goals, the G7 should direct assistance to EMDEs in three key areas:

- Scale up and broaden recent G7 initiatives, such as the Just Energy Transition Partnerships and the Partnership for Global Infrastructure and Investment, to accelerate the clean energy transition in EMDE partners.
- Assist EMDEs in establishing the minimum carbon price floor requirements of the G7 Climate Club through carbon pricing and other policies.
- Encourage EMDEs to develop novel and affordable policies that could simultaneously achieve poverty, development, and climate mitigation goals, especially in rural areas.

The Just Energy Transition Partnership (JETP) is a financing cooperation mechanism created by the G7 to help EMDEs reduce fossil fuel dependency, and especially overreliance on coal, to accelerate a clean energy transition. The first JETP was established between the G7 members and South Africa at COP26 in Glasgow in 2021. Two new partnerships were launched with Indonesia and Viet Nam in 2022, and two more are planned with Senegal and India.

If expanded and adequately funded, JETPs could accelerate the clean energy transition in EMDE partners and encourage their eventual participation in the G7 Climate Club. This would require scaling up and broadening the assistance provided by the G7 while working with its partners to implement carbon pricing and other actions necessary for them to join the Climate Club.

The G7 could also support JETPs and the clean energy transition in partner countries through its other new initiative, the Partnership for Global Infrastructure and Investment (PGII). Launched at the 2022 G7 summit in Germany, the PGII seeks to mobilize $600 billion in global infrastructure investments from public and private sources by 2027, with $200 billion pledged by the United States in June 2022 (White House 2022). To help accelerate the low-carbon transition in partner EMDEs, the PGII should prioritize green infrastructure investments that are complementary to the financing of this transition through JETPs. Such investments could include:

- Developing a “smart” electrical grid transmission system that can integrate diffuse and conventional sources of supply.
- Developing regional and national networks of charging stations to facilitate the rapid adoption of electric vehicles.
- Improving urban development through combining municipal planning and transport policies for more sustainable cities.
- Investing in mass transit systems, both within urban areas and major routes connecting cities.
- Adopting and developing new low-carbon technologies, such as green hydrogen, that may assist low-carbon industrial transformation.
- Targeting decarbonization of EITE industries.

In exchange for greater financial and infrastructure investments to accelerate their clean energy transition, partner EMDEs should commit to adopting the appropriate carbon pricing and other policies necessary to attain the minimum carbon price floor requirements for participating in the G7 Climate Club. The G7 should assist potential EMDE members in these policy efforts.
The G7 could provide this assistance through collaboration with the Partnership for Market Implementation (PMI) facility. Following the successful Partnership for Market Readiness, which since 2011 has helped 23 countries establish the necessary building blocks to implement carbon pricing, the World Bank launched the PMI in 2021 with the goal of putting carbon pricing policies and programs in place in at least 30 countries by 2025. Three of the countries currently assisted by the PMI are Indonesia, Senegal, and Viet Nam, which already have JETPs with the G7: Canada, the European Commission, Germany, Japan, and the United Kingdom are among the donors behind the initial $125 million funding of the PMI.

Consequently, the G7 could support and expand the PMI by providing additional capitalization so that the scheme can assist more EMDEs to adopt carbon pricing. One important objective would be to help these countries overcome the “dime” problem that is a key barrier to market-based instruments—design, implementation, monitoring, and enforcement. The priority for PMI assistance should be those EMDEs that are willing to form JETPs with the G7 economies, engage in complementary green infrastructure investments through the PGII, and seek assistance to adopt carbon pricing and other actions necessary for them to join the G7 Climate Club.

EMDEs may also need assistance to develop novel and affordable policies that could achieve simultaneously poverty, development, and climate mitigation goals, especially in rural areas. Two policies appear to meet these criteria: a fossil fuel subsidy swap to fund clean energy investments and dissemination of renewable energy in rural areas, and using proceeds from a carbon tax to fund nature-based solutions.

Ending the underpricing of fossil fuels in EMDEs must occur through policies that are compatible with achieving immediate development objectives, such as ending poverty and especially the widespread “energy poverty” in rural areas. A proven strategy that could be implemented relatively easily in EMDEs is a subsidy swap for fossil fuels, whereby the savings from a partial and limited reform for coal, oil, and natural gas consumption subsidies are allocated to fund clean energy investments (Barbier 2022a, 2022b; Bridle et al. 2019; Sanchez, Wooders, and Bechauf 2020). For example, a 10% to 30% subsidy swap from fossil fuel consumption to investments in energy efficiency and renewable energy electricity generation could “tip the balance” between fossil fuels and cleaner sources of energy (Bridle et al. 2019). A study of 26 countries, 22 of which are EMDEs, finds that such a policy could substantially reduce greenhouse gas emissions by 2030 (IISD 2019).

A fossil fuel subsidy swap could also be used to facilitate greater dissemination and adoption of renewable energy and improved energy efficiency technologies in rural areas, which has been done through a number of different programs in EMDEs worldwide (Barbier 2022a, 2022b; Pahle, Pachauri, and Steinbacher 2016; Zaman, van Vliet, and Posch 2021). One possibility is the expansion of solar energy “safety nets” aimed especially at the millions of poor rural households that live in remote areas and are still without access to energy (Barbier 2022b; Zaman, van Vliet, and Posch 2021). These are targeted social assistance programs to provide solar power as an off-grid solution to solving lack of access to energy for poor rural households in remote locations. Bangladesh and India have piloted such schemes, which provide clean energy access to remote rural households through the free distribution of solar home systems and solar lamps (Zaman, van Vliet, and Posch 2021).

As discussed previously, nature-based solutions (NBS) have been proposed as a way of preventing further losses in biodiversity while curbing greenhouse gas emissions from tropical land use
change. NBS are relatively inexpensive in the tropics. For example, cost-effective tropical NBS can mitigate 6,560 $10^4$ tonnes of CO$_2$e in the coming decades at less than $100$ per $10^3$ tonnes of CO$_2$e, which is about one-quarter of emissions from all tropical countries (Griscom et al. 2020).

Although increasing investments in nature-based solutions in EMDEs may be an important and immediate spending priority, a key issue for many fiscally constrained economies could still be how to fund them. Even before the COVID-19 pandemic, the international community has not provided sufficient financing of such investments in tropical countries (Griscom et al. 2020; Barbier 2022a). One novel approach, which has been adopted in Costa Rica since 1997 and Colombia in 2016, is to use some of the proceeds from a small carbon levy on fossil fuel imports and consumption to pay for investments in NBS (Barbier et al. 2020).

For example, Colombia’s policy amounts to an effective carbon tax of $5 per tCO$_2$ on all fossil fuels. It yielded revenues of $148$ million in 2017 and $91$ million in 2018, of which 25% is used to manage coastal erosion, reduce and monitor deforestation, conserve water sources, protect strategic ecosystems, and combat climate change. A further 5% of the revenues is allocated to strengthen Colombia’s national system of protected areas. In Costa Rica, the policy also funds a payment for an ecosystem services scheme targeted at districts with high levels of poverty, and it assists smallholder farmers and indigenous peoples in submitting requests for funds. Around 40% of beneficiaries in Costa Rica are communities that live below the poverty line (Barbier et al. 2020).

**Conclusion**

This policy brief has outlined a strategy for the G7 to reduce over-reliance on fossil fuels and promote a transition to clean energy through designing a more inclusive Climate Club. The basic elements of the policies that should be adopted are outlined in Figure 1. Further details and analysis supporting this strategy can be found in Barbier (2023).

By adopting such a comprehensive and coherent strategy, the G7 members can not only act collectively to accelerate a low-carbon transition of their economies, but also encourage other countries to follow suit. The overall aim of this strategy is to create the conditions for an inclusive Climate Club, which encourage more countries, including EMDEs, to create the market and institutional conditions for a clean energy transition, foster the attainment of climate, poverty, and development goals, and promote strong and resilient economies.
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References


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**About Think7**

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