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Research Report

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SWP Comment

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The Global Shift Away from Fossil Energy

A blind spot in climate foreign policy

Sonja Thielges

Climate experts are apprehensive about the approaching Presidency of the United Arab Emirates at this year's Conference of the Parties (COP) to the UN Framework Convention on Climate Change (UNFCCC). So far, the oil producer has not set a shining example with its climate protection efforts; and Sultan Al Jaber, this year's COP president, is head of the Abu Dhabi National Oil Company, one of the largest oil concerns in the world. To achieve the goal set by the Paris Climate Agreement of seeking to limit the average global temperature to 1.5 degrees Celsius above the pre-industrial level, the international community is striving for climate neutrality in the second half of this century. For this to happen, global energy systems will have to largely phase out fossil fuels, which, however, remain the dominant energy source. The fact that at present, a complete phase-out of fossil fuels cannot be expected is often lost in climate policy debates; in most countries, it is neither politically desired nor envisaged in long-term climate strategies. However, a speedy and orderly phase-down would have major benefits, such as providing the right investment incentives and supporting the necessary socioeconomic transformations in fossil-fuel producing countries. Today there is an urgent need to further develop the relevant policy and governance instruments as time is running out.

The latest Synthesis Report of the Intergovernmental Panel on Climate Change (IPCC) reinforces the fact that if the international community wants to achieve its declared goals of limiting the increase in global temperature to well below 2 degrees Celsius and achieving climate neutrality in the second half of the century, global greenhouse gas emissions must fall drastically before 2030 (see SWP Comment 25/2023). However, the opposite is currently the case: emissions continue to rise. The main reason for this is the use of fossil fuels. Oil, natural

gas and coal currently account for about 80 per cent of total global energy supplies.

Thus, the obvious solution is to move away from fossil fuels in energy production and consumption by switching to renewable energies. The Net Zero Emissions (NZE) scenario of the annual World Energy Outlook of the International Energy Agency (IEA) shows that in 2050, the share of fossil fuels in the global energy mix will have to be less than one fifth to be compatible with the goal of climate neutrality. Only a fraction of this share can be "unabated", i.e.,



not combined with measures to capture and store or reuse CO₂ (carbon capture and storage [CCS] or carbon capture and utilization [CCU] – see SWP Comment 29/2023). In order to compensate for the residual CO₂ emissions that are difficult to avoid, CCS and CCU would have to be complemented by measures to remove CO₂ from the atmosphere (carbon dioxide removal [CDR]) in order to achieve negative emissions.

Under the NZE scenario, the production and consumption of fossil fuels must rapidly decrease. The 2023 IPCC Synthesis Report implies banning new unabated production sites in order to maintain the 1.5-degree target. This is because greenhouse gases are produced not only during the combustion of fossil fuels but also during the production process itself.

But here, too, the opposite is the case. During the Covid-19 pandemic, the global production of oil, natural gas and coal declined significantly for the first time ever; but once the post-pandemic economic recovery got under way, it picked up again. In its World Energy Outlook 2022, the IEA projects that oil demand will finally peak only within the next 10 years. In the case of natural gas, the peak could be reached in 2030; but, in contrast with oil, no reduction is expected thereafter until 2050. This is because in the electricity mix of many countries, emission-intensive coal is being substituted not only with renewable energies but also with natural gas. It is also because natural gas production is receiving a boost from the anticipated global demand for natural gas-based blue hydrogen. For these reasons, the Gas Exporting Countries Forum expects natural gas demand and production to continue to rise until 2050.

Fossil fuels and the global climate policy agenda

For a long time, the phase-out of fossil fuels did not feature in international climate negotiations or other global governance initiatives owing to the lack of consensus on the issue. Recently, however,

there has been some movement. At the last two COPs, the Parties were unable to agree on a joint declaration to phase out all fossil fuels but they were able to agree on a “phase-down” of coal-fired power generation.

Experts are concerned that the oil-producing UAE assuming the COP Presidency this year will send the signal that the use of fossil fuels in combination with technologies such as CCS will be considered unproblematic for climate protection going forward. At this year’s Berlin Energy Transition Dialogue, COP President Al Jaber referred to CCS and “the least carbon-intensive oil and gas” being part of conceivable climate-policy solutions. CCS must be significantly expanded, he said, while policymakers must provide the appropriate incentives as so far this technology has been too costly.

The narrative about of clean, ‘abated’ fossil fuels

While it is to be welcomed from a climate protection perspective that fossil fuels are now on the agenda of international climate negotiations, it is rather alarming that the narrative about supposedly clean – that is, “abated” – fossil fuels is becoming widespread. In combination with CCS, CCU and negative emissions, so the story goes, the production and consumption of fossil fuels is fully compatible with climate neutrality by 2050.

From the perspective of the techno optimists, there appears to be no imperative to phase down fossil fuels on a large scale. And this assumption is communicated not only by the UAE but also in the long-term strategies submitted to the UNFCCC by major fossil-producing industrialized countries and large consumers.

Canada, for example, does not plan to phase out fossil fuel subsidies until 2050 and will promote CCU and CCS by means of tax breaks during this period. In its recent conclusions on climate and energy diplomacy, the Council of the European Union established the goal of working internally and internationally to ensure

energy systems are free of unabated fossil fuels before 2050. But while the Council argues that unabated coal-fired power generation must cease as countries strive for climate neutrality, this does not apply to natural gas. Nor does the Council make any mention whatsoever of the role of oil. Meanwhile, for its part, the US is planning to shift away from unabated to abated oil and gas consumption.

Such stances on abated fossil energy sources must be viewed critically. First, CCS does not achieve complete capture of CO₂; the capture rates today are often well below 100 per cent. Second, the process is very energy-intensive, remains extremely costly and depends on highly specialized technology. The use of this technology may be an option for many industrialized countries as well as for some oil- and gas-producing countries, but it is not a realistic proposition in developing countries. Furthermore, CCS cannot be deployed everywhere as the appropriate geological storage sites are necessary. It is therefore unrealistic to expect this technology to be widely used – and certainly not by 2030.

The clean production of fossil fuels

Efforts to make oil and natural gas cleaner are also under way on the production side. One strategy is to curb methane emissions generated by oil and gas production. No fewer than 150 countries and institutions are now signed up to the Global Methane Pledge, according to which emissions of the highly potent greenhouse gas are to be reduced at least 30 per cent from 2020 levels by 2030. Both the EU and the US, for example, are drawing up regulations that will help find and fix methane leaks in the infrastructure of the oil and gas industry more quickly. But here, once again, it is unlikely from a global perspective that all greenhouse gas emissions can be avoided. There is also the risk of rebound effects. Indeed, the Gas Exporting Countries Forum assumes that global natural gas production will increase not least owing to the expected implementation of the Global Methane Pledge.

It should be noted that overall, abated and more “cleanly” produced fossil fuels contribute to climate protection but not to climate neutrality. The narrative of abated fossil fuels distracts from what can be learned from climate neutrality scenarios such as that of the IEA. According to the NZE, even if all technological means (such as CCS and CCU) are deployed and there is a complete switch from “unabated” to “abated” fossil fuels, it will still be necessary to drastically reduce the share of fossil fuels in today’s energy mix. Within no more than 25 years, that share must decrease from the current 80 per cent to a maximum of 20 per cent. Negative emissions should be used only in the case of those residual emissions that absolutely cannot be avoided – for example, from industry and agriculture. Ultimately, the image of a “clean” use of fossil energy sources that is unproblematic in terms of climate policy will only provide investment incentives to continue producing such fuels. Meanwhile, there are few incentives to reduce the production of oil and natural gas, despite the enormous cost reductions that renewable energies have seen.

International policy and governance approaches

Beyond the COP, the fossil fuel phase-out remains on shaky ground internationally. Initial commitments have been made and alliances formed, but implementation, the participation of major countries and the requisite ambition are often still lacking.

Fossil fuel subsidies

In a bid to create incentives to reduce the consumption of fossil fuels, the phase-out of “inefficient” fossil subsidies that encourage “wasteful consumption” has been included on the agendas of the G20, the G7 and the Asia-Pacific Economic Cooperation (APEC) since 2009. At COP26 in Glasgow 2021, the international community en-

dorsed this very wording for the first time in the Glasgow Climate Pact.

The IPCC predicts that the elimination of fossil subsidies could reduce greenhouse gas emissions by up to 10 per cent by 2030. While the approach of international forums is promising, it is also controversial. On the one hand, there is no clear definition of what is meant by “inefficient subsidies”. On the other hand, there has been no measurable success to date: in 2020, fossil energy subsidies in the G20 were as high in nominal terms as they had been in 2010; and as figures from the IEA show, global fossil subsidies were at their highest level ever in 2022. And what is more, there is very real concern that the poorest segments of the population could be hit hardest if subsidies were to be abolished without compensation mechanisms.

End of public funding of fossil projects

Another approach is cooperation aimed at ending public funding of fossil projects abroad. At COP26, a total of 39 signatory institutions and countries pledged in the Glasgow Statement to end direct public support for unabated international fossil-fuel projects within a year. They noted that priority should be given instead to clean energies. The environmental ministers of the G7 countries endorsed this plan under the German Presidency of the G7 in 2022. However, the final communiqué of the German Presidency watered down that commitment: member countries should be allowed, at least in exceptional cases, to promote new natural gas projects abroad. At their meeting in April 2023 under the Japanese Presidency, the G7 environmental ministers agreed on a formulation whereby the phase-out of unabated fossil fuels is to be accelerated so that climate neutrality can be achieved by 2050 at the latest.

Cooperation in the area of oil and gas production

Various initiatives are aimed at lowering incentives for oil and gas production. The G7 countries plan to develop an international approach to measuring, monitoring, reporting and verifying methane emissions generated by the fossil-fuel production process. Emissions are to be reduced along the entire value chain and leaks quickly identified and repaired.

At COP26, Costa Rica and Denmark launched another initiative: the Beyond Oil and Gas Alliance (BOGA), the goal of which is the orderly phase-out of oil and gas production. The issue is to be put on the international agenda so that corresponding measures can be mobilised. Under BOGA, governments are to be supported in their efforts to phase out oil and gas. Since COP26, the alliance has attracted another 17 national and subnational members, but no major oil and gas producers have yet joined. Aspiring new core members must commit to not issuing new licences for the exploration and exploitation of oil and gas deposits.

A non-proliferation treaty for fossil fuels

The Fossil Fuel Non-Proliferation Treaty Initiative emerged in 2019 as a transnational movement promoting the creation of a fossil fuel non-proliferation treaty. Scientists Peter Newell and Andrew Simms spelled out this idea in an article that appeared in the *Climate Policy* journal in 2019. According to that article, the goal is an orderly phase-out of coal, oil and gas production with a focus on “*just transition*”. The initiative, though still in its early stages, is supported not only by particularly vulnerable small island states but also by such actors as the European Parliament, subnational governments, international organizations and companies.

Cooperation on coal phase-out

Unlike in the case of oil and gas, there are already internationally agreed timelines for the phase-out of coal as well as governance arrangements that, among other things, aim to help finance that process. The Glasgow Climate Pact is the first key COP document to include the goal of phasing down unabated coal-fired power generation. Meanwhile, under the Powering Past Coal Alliance, some UNFCCC members have been committed since 2017 to the more ambitious goal of completely phasing out unabated coal-fired power generation by 2030. However, Germany is the only major coal-producing country in this alliance.

A new steering instrument for phasing out coal emerged in 2021 in the form of the Just Energy Transition Partnerships (JETPs). The first cooperative venture within this framework is between South Africa, on the one hand, and France, Germany, the UK, the US and the EU, on the other. The aim is to support the decarbonization of South Africa with the focus on phasing out coal. In the first funding phase, the partners have committed to mobilize US\$8.5 billion for this purpose. Similar formats are currently being developed with India, Indonesia, Vietnam and Senegal. Since burning coal to generate electricity is extremely emission-intensive, these initiatives are an important first step.

Policy measures in country comparison

Besides these global cooperation initiatives, various supply-side approaches can be found at the country level to reduce the production of fossil energy sources. One such approach is to impose moratoriums on new oil exploration, which is what countries such as Belize, Costa Rica, Denmark, France and New Zealand have done. Under the Biden Presidency, the US, which is the world's largest oil and gas producer, announced a similar moratorium on auctioning oil and gas drilling permits on public land and water. However, the moratorium

was by the US Court of Appeals and later partly overturned by federal legislation.

Furthermore, some countries have implemented so-called divestment strategies. Sweden and Ireland have given up stakes in fossil fuel projects and the Norwegian sovereign wealth fund has relinquished shares in coal companies. For its part, India has levied a tax on coal production, while Denmark, which is currently the second-largest oil producer in the EU, has set 2050 as the end date for oil and gas extraction. Meanwhile, Estonia has decided to stop shale oil production by 2040.

Another instrument is the imposition of restrictions on fossil-fuel infrastructure projects. In 2021, for example, the Biden administration revoked a permit to expand the Keystone oil pipeline, which was to have transported oil from Canada to the US. The following year, in response to the Russian war of aggression against Ukraine, German Chancellor Olaf Scholz banned the commissioning of the Nord Stream 2 pipeline, which had been intended to transport natural gas from Russia to Germany.

Fossil fuel phase-out as dilemma for oil- and gas-producing countries

The phase-out of fossil fuels is a complex and major challenge not only for coal-producing countries but especially for the large oil and gas producers. This is because of the geopolitical, security and socio-political implications. The economies of many countries and regions depend heavily on the production and export of fossil fuels. Indeed, it is not only the OPEC members to which this applies; government revenues from fossil fuels also play an important role for the BRIICS countries (Brazil, Russia, India, Indonesia, China and South Africa). If climate neutrality is to be achieved by 2050, oil and gas will have to be largely phased out – which, depending on the climate scenario, could happen between 2034 and 2050 – and this will inevitably mean lost revenues for governments, triggering seri-

ous social and economic consequences. Countries will have to find new sources of revenue in order to continue pursuing goals such as poverty reduction and the development of sustainable energy systems.

When a country produces its own fossil fuels and thereby decreases its dependence on energy imports, its energy security increases. The ongoing Ukraine war clearly demonstrates just how important energy is a source of international power. Nevertheless, a shift away from fossil fuels is also in the interests of the producing countries – and not simply from a climate policy perspective. As the global energy transition moves forward and international efforts aimed at climate protection are stepped up, the markets for fossil energy will become smaller and trade will decline. Owing to international climate targets, investments in fossil projects carry a significant risk of *ending up* as *stranded assets*. This is because capacity and infrastructure are designed to be used for several decades. The IPCC forecasts that coal assets could become stranded even before 2030. In the case of oil and gas assets, the corresponding timeline is by mid-century.

At the same time, transitioning away from fossil energy poses the risk of destabilizing entire societies and regions: the necessary economic transformation will entail not only the creation of new industries and jobs but also the loss of existing jobs, which could lead to distribution conflicts. Moreover, experts expect climate change itself to have a destabilizing effect. Thus, these dynamics could reinforce one another if the economic transformation and the fight against climate change do not succeed.

The role of industrialized countries and other major energy importers

Finally, it is also the industrialized countries and other major energy importers that face major challenges in moving away from fossil fuels. Through their demand for

energy, they, too, have a decisive influence on the actual pace of the phase-out. Along with the industrialized countries of the EU and Japan, the emerging economies of China and India number among the largest fossil-fuel importers. For this reason, it will be crucial to promote the transformation of energy systems and sustainable growth paths in all these countries.

Furthermore, the industrialized countries in particular may have to assume even greater obligations in order for the rapid shift away from fossil energy to be achieved. According to scientific estimates, the coal phase-out in emerging and developing countries is not happening fast enough to meet global climate targets. The industrialized countries could be called upon to compensate for this – because of their historical responsibility for climate change and their already existing access to clean energy technologies. Thus, it could be the case that they would not only have to phase out coal quickly; they would also have to transition away from oil and gas much faster. At present, however, there are no signs that this will happen.

Conclusion: How to further develop climate policy for the fossil fuel phase-out

The debate on abated fossil energies must not obscure the fact that the fight against climate change will succeed only if the production and consumption of fossil energy is drastically reduced over the next two decades. While this requires tailor-made approaches at the country level, international cooperation plays an equally important role. Fossil energy sources are traded globally, and investment signals have a greater impact when they are sent by alliances of states. The first steps have already been taken towards developing policy and governance approaches. However, it is important that these are implemented, further developed and rapidly become more ambitious. A lack of strategic planning could have fatal consequences

for climate protection as well as for the global economy and security. Below are ideas on how climate policy can be developed going forward.

Implementing existing promises. The G7, G20 and APEC have all agreed to phase out inefficient fossil-fuel subsidies. The signatories to the Glasgow Climate Pact pledged to end international public funding of unabated fossil-fuel projects in the near future. An important step for international climate policy is that these promises are fulfilled. They must not disappear from the agenda, even if implementation is behind schedule.

Rewarding reductions in fossil energy exports. Countries that export fossil fuels face a special challenge. Their greenhouse gas balance reflects the emissions generated by the production and combustion of fossil fuels at home. But at the same time, they contribute significantly to climate change by exporting fossil fuels that are burned in other countries. This is especially true if the recipient countries have only limited climate-policy ambitions. Reducing exports of fossil energy, however, is not recognized as a measure to cut greenhouse gas emissions, as it does not affect the domestic side of the balance sheet. For this reason, members of the scientific community have suggested supplementing the measurement of emissions in the UNFCCC context so that emissions resulting from the export of fossil fuels are included and can be avoided by restricting shipments (Georgia Piggot et al. 2018). In this way, fossil energy supplies would be more clearly linked to climate targets and there would be greater overall transparency and comparability with regard to the emissions of various countries.

Anchoring the transition away from fossil fuels in the UNFCCC context. Among oil and gas producers with relatively ambitious climate targets, such as the US, and other climate-ambitious countries, such as Germany, no references are made either to the fossil fuel phase-out or even to plans for a gradual phase-down in the

nationally determined contributions or the long-term strategies for 2050. So far, the only measures mentioned are the targeted reduction of inefficient subsidies and various demand-side approaches such as the conversion of heating systems and the switch to electric mobility. But pioneering countries should set an example by anchoring the shift away from natural gas and oil production in their submissions to the UNFCCC.

Leveraging already existing bilateral and multilateral partnerships. The G7 and G20 countries are among the world's largest importers of oil and gas. Together with countries such as China, India, the US, Japan and South Korea, the German government maintains intensive bilateral relations beyond the multilateral forums. These include climate and energy partnerships. Besides the expansion of renewable energies, the agendas of the working groups of these bilateral and multilateral associations should cover approaches to reducing demand for fossil energy sources. After all, the expansion of renewables does not automatically lead to lower fossil-fuel consumption, at least not in a structured way.

Further developing club formats. UNFCCC framework decisions invariably represent a consensus of all the Parties. It is unrealistic to expect rapid progress towards doing away with fossil fuels in the near future. Fossil fuel producers still have vested interests in holding on to these energy sources. A more promising format right now is that of smaller "coalitions of the willing" that agree to phase out fossil fuel production. By making progress on this front, an important signal would be sent to the financial world and other fossil producers. This could happen within the EU. Italy, Denmark and Romania are the largest oil producers, while the Netherlands, Romania and Germany are the leading gas producers. In the G7 context, the US and Canada – both major fossil producers – have committed themselves to climate neutrality. It would be an important sign for the international

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community if these countries were to act on those aspirations and draw up corresponding targets for phasing out fossil production or at least clearly defining their reduction aims. This would give them sufficient time to plan and implement the necessary structural changes.

At the same time, existing club formats such as the Powering Past Coal Alliance, BOGA and the JETPs should be further expanded. In the case of the JETP with South Africa, one of the world's largest producers of coal, cooperation is focused exclusively on this fossil energy source. In all JETP partner countries and in all future partnerships, however, the aim should also be to phase out oil and gas production and consumption. If oil and gas licences are not used or fossil energy sources remain underground, financial compensation could be another approach, as Martí Orta-Martínez et al. 2022 have proposed in the journal *Global Environmental Politics*. This would reduce the risk of *stranded assets* and enable countries to create sustainable energy and economic systems as well as increase their energy security.

Making climate foreign policy more coherent and thereby stronger. Even though Germany is one of the most important international financiers of renewable energies, it continues to channel more public funds into fossil fuel projects in partner countries than into renewable energies. Moreover, the German government has so far not ruled out the possibility of Germany producing natural gas from unconventional deposits – for example, shale gas – in the future. These are just two examples of a certain policy incoherence vis-à-vis declared climate goals. For countries, like Germany, that have an ambitious climate foreign policy, it is particularly important to tackle such inconsistencies in order to maintain their own credibility. Much is expected of the industrialized countries as they have more resources to tackle the socio-economic consequences of phasing out fossil production than do developing countries.

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