

Enhancing Action & International Cooperation for the Transition Away from Fossil Fuels

Discussion paper

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Center for Climate and Energy Solutions

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A. Summary

1. The period from the end of the global stocktake (GST) at COP28 (2023) through to COP30 (2025) is critical. During this time period we will learn the collective level of ambition of new climate targets, whether countries have taken into account the outcomes of COP28 in formulating them, and whether countries have put in place the domestic plans, legislation, finance and investment needed to implement those new targets. In the context of the Paris Agreement’s ambition cycle, 2024 is a crucial year for preparation, action, and enhanced international cooperation.
2. The GST decision from COP28 sets out a number of key, transformational global targets and signals to Parties to: (i) inform their next nationally determined contributions (NDCs); and (ii) enhance implementation and international cooperation.¹ Parties are expected to communicate their NDCs by February 10, 2025, with an end date of 2035.² The GST signals form part of guidance and requirements that have been set out from Paris to date,³ including that:
 - Each Party’s successive NDC will represent a “progression” beyond its previous NDC and reflect its “highest possible ambition,” reflecting its common but differentiated responsibilities and respective capabilities (CBDR-RC), in the light of different national circumstances⁴

- Parties “shall pursue domestic mitigation measures, with the aim of achieving the objectives” of their NDCs⁵
 - Parties include, as part of the information to facilitate clarity, transparency, and understanding of NDCs:
 - how the Party considers that its NDC is fair and ambitious in the light of its national circumstances⁶
 - how the NDC contributes toward achieving the objective of the Convention as set out in its Article 2⁷
 - how the NDC is informed by the outcomes of the GST, in accordance with Article 4, paragraph 9, of the Paris Agreement⁸
 - Parties come forward with ambitious, economy-wide emission reduction targets, covering all greenhouse gases, sectors and categories and aligned with limiting global warming to 1.5 degree C, as informed by the latest science, in the light of different national circumstances⁹
 - Parties commit to accelerate action in this critical decade on the basis of the best available science, reflecting equity and the principle of CBDR-RC in the light of different national circumstances and in the context of sustainable development and efforts to eradicate poverty¹⁰
 - Parties put in place new or intensify existing domestic arrangements for preparing and implementing successive NDCs¹¹
 - Parties present their next NDCs at a special event to be held under the auspices of the United Nations Secretary-General.¹²
3. The Presidencies’ Troika letter from March 21, 2024 recognizes the need for leadership among an apparent wealth of actors, events, and pathways for Parties to avail themselves in their efforts to take forward the GST targets and signals.¹³ Their second letter from July 23, 2024 further elaborates their Mission 1.5 work plan to engage Parties in a targeted set of activities for the remainder of 2024 to enhance ambition and enable action toward COP29.¹⁴ While this establishes a welcome platform, Parties and non-Party stakeholders (NPS) may find a more elaborated vision helpful in guiding them to effectively action each of the GST signals, reflect them in new NDCs, and achieve them.
4. In order to implement the GST targets and signals through enhanced NDC ambition and implementation, major barriers must be meaningfully addressed, turned into opportunities for enhanced international cooperation, and translated into development priorities and domestic policies. In the context of making the case for clear leadership to enable such action, this paper:
- focuses on the GST decision’s call to Parties to contribute to, in a nationally determined manner, **the transition away from fossil fuels in energy systems, in a just, orderly, and equitable manner, accelerating action in this critical decade, so as to achieve net zero by 2050 in keeping with the science**¹⁵
 - sets out barriers and solutions, as identified by our work and others, that must be addressed and implemented to enable real action in 2024,¹⁶ and
 - sets out key leadership considerations, how such a leadership role can be effectively utilized, and key priorities for 2024-26.
5. Parties have nevertheless not yet accelerated the energy transition to the global pace and scale necessary to achieve the goals of the Paris Agreement, despite repeated observations that shifting to renewable energy and increasing energy efficiency are “rational,” the “right economic choice,” “easy,” or “obvious.”¹⁷ First, global production and use of fossil fuels has not declined. Second, some Parties may significantly increase their renewable energy capacity *and* continue to use—or even increase their use of—fossil fuels. It is essential to understand the reasons for this and address them.

6. Many of the **obstacles to the accelerating the transition away from fossil fuels can largely be boiled down to four immediate challenges:**
- lack of capacity to leapfrog to renewable energy given a **lack of, and increasing cost of, capital**, especially in developing countries
 - **ongoing fossil fuel subsidies** that can generate cheaper rates for electricity derived from fossil fuels and provide reduced incentives for investment in renewable energy
 - **dependence on revenues from oil and gas and/or political entanglement with the fossil fuel industry**
 - **long lead times to obtain permits** and to build renewable energy grids.
7. Parties must respond quickly and tangibly to the call to transition away from fossil fuels in energy systems. A number of solutions and opportunities exist to help overcome these challenges. At the same time, clear leadership that is inspiring, inclusive, respects the nationally determined nature of NDCs and meets Parties and NPS where they are in terms of capacity, is essential. Enhanced international cooperation is vital to move from incrementalism to transformative levels of action in 2024 and beyond.

Paragraph 28 of the GST decision sets out a package of critical mitigation targets and signals.¹⁸ The achievement of no one signal or target alone will result in the deep, rapid, and sustained reductions in greenhouse gas emissions in line with 1.5 degree C pathways.

To drive the achievement of the transition away from fossil fuels in energy systems, in a just, orderly, and equitable manner, accelerating action in this critical decade, so as to achieve net zero by 2050 in keeping with the science, Parties should:

- **commit in their NDCs to stop building new unabated coal-fired power generation plants**

For instance, embedding commitments in NDCs to not build or to shut down or repurpose existing coal-fired power stations will generate momentum to achieving the commitment made in Glasgow to accelerate efforts toward the phase-down of unabated coal power. In addition, reusing existing coal-fired power plant sites for solar PV, battery energy storage, thermal energy storage, and advanced reactors can provide significant economic benefits to local communities and drive down carbon emissions and energy costs. For example, Canada repurposed existing coal plant infrastructure to build a 44-megawatt (MW) solar power station in Nanticoke, Ontario.¹⁹

- **encourage or require oil and gas companies to increase transparency in their transition strategies**, by measuring, monitoring, publicly reporting, and independently verifying their greenhouse gas emissions, **including methane**, and their performance and progress in reducing emissions from their operations, with the aims of:²⁰
 - joining broad coalitions with ambitious targets
 - informing mid-and long-term transition strategy targets to diversify and/or to ultimately shut down oil and gas production.

For instance, companies that have announced a target to diversify their activities into clean energy account for just under one-fifth of current oil and gas production. Less than half of current global oil and gas output is produced by companies that have targets to reduce their emissions.²¹ Verification and accountability mechanisms increase transparency, ensuring that actors are taking the necessary

steps toward their goals. It is an important prerequisite to join existing initiatives such as the Global Methane Pledge,²² Oil and Gas Decarbonisation Charter,²³ or UN Environment Programme’s Oil & Gas Methane Partnership 2.0 (OGMP 2.0).²⁴

- **integrate just transition strategies or plans within short- and long-term climate plans, such as NDCs; long-term low-emission development strategies (LT-LEDS); and national adaptation plans (NAPs).**

For instance, comprehensive policy frameworks that align the just transition with national priorities can provide the means by which marginalized groups, those impacted by the transition, and youth are incorporated in the planning and implementation of just transition policies. The United Arab Emirates (UAE) Just Transition Work Programme can be utilized, along with key supporting organizations and initiatives, as a capacity-building forum for the development of such strategies.

The Presidency Troika’s leadership approach, including Mission 1.5 and Brazil’s Presidency of the of the G20, provides a unique opportunity to set out a new model for collaborative leadership. Building on the GST targets and signals from the UAE Consensus, COP29 must give Parties assurance that climate finance—drawn from a variety of sources—will be available such that (i) Parties can come forward with ambitious NDCs and (ii) subsequently implement those NDCs. COP30 in Belém must reflect on the level of ambition presented by the NDCs and set the new direction as we head toward the end of this critical decade.

Questions for Consideration

- How are Parties planning to take forward the signal to transition away from fossil fuels in a just, orderly, and equitable manner? How will this be reflected in new NDCs in 2025?
- How can Parties best be supported in efforts to transition away from fossil fuels?
- What is the plan to enhance international cooperation toward the transition away from fossil fuels in energy systems, in order to achieve global net-zero emissions by 2050?

B. Context

8. The GST is a key part of the Paris Agreement’s “ambition cycle.”²⁵ Parties to the Paris Agreement are required to undertake a GST every five years “to take stock of the implementation of this Agreement to assess the collective progress towards achieving the purpose of this Agreement and its long-term goals...It shall do so in a comprehensive and facilitative manner, considering mitigation, adaptation and means of implementation and support, and in light of equity and the best available science.”²⁶
9. The outcome of the GST shall inform Parties in: (i) updating and enhancing, in a nationally determined manner, their actions and support (including their NDCs); and (ii) enhancing international cooperation for climate action.²⁷ The GST outcome also reaffirms sustainable and just solutions founded on meaningful, inclusive participation of all stakeholders and underlines that just transitions can support more robust and equitable mitigation outcomes.²⁸

10. Parties are encouraged to communicate their NDCs by February 10, 2025, with an end date of 2035.²⁹ There are guidance and requirements for their NDCs that have been set out by Parties from Paris through to COP28 (see “**Error! Reference source not found.**” above).
11. In the November 2023 *NDC Synthesis Report*, only 9 percent of Parties indicated measures for phasing down unabated coal power generation, and only 4 percent of Parties indicated measures for phasing out inefficient fossil fuel subsidies.³⁰ Seventeen percent of Parties specified fluorinated gas emission targets, and 4 percent indicated methane emission targets in their NDCs.³¹ Fifteen percent of Parties have communicated measures to reduce methane, such as achieving zero routine flaring by 2030, with a long-term goal to reduce flaring to the absolute minimum.³² Of the 21 percent of Parties that referenced economic diversification as part of their national development plans and climate policies to boost the country’s resilience to climate change and response measures, 76 percent linked such plans to an existing poorly diversified economy and the impact of response measures on sectors of high economic importance, such as extraction of fossil fuels.³³
12. On the basis of their national circumstances and development pathways, 58 percent of Parties highlighted other contextual aspirations and priority areas, such as just transition of the workforce, in their NDCs.³⁴ Of the 45 percent of Parties that considered mitigation co-benefits resulting from their adaptation and/or economic diversification plans, 58 percent considered social and economic consequences of response measures and included an economic diversification plan and/or a just transition or social pillar for designing climate policies.³⁵ 31 percent of Parties plan to include the concept of just transition in their overall NDC implementation, such as a just transition mechanism and just transition funds; laws and strategies for protecting workers; a social mechanism for job creation, skills development, and employment policies; and a consultation process for social protection.³⁶ Four percent of Parties mentioned the need and/or measures for a just transition for communities and workers dependent on coal.³⁷ 57 percent of LT-LEDS reference just transition principles.³⁸
13. The year 2024 is a crucial year to take forward the GST targets and signals, translating them into effective domestic policies and measures as well as enhancing international cooperation on climate action. The moment of truth as to whether the GST, in the wider context of the Paris Agreement’s ambition cycle, will have succeeded in increasing ambition will be February 10, 2025 when new NDCs must be tabled by all Parties. The collective impact of these will be set out in a synthesis report to be made available ahead of COP30.³⁹ Furthermore, COP30 in Belém should not be seen as a cliff edge; it will need to set out the world’s response to level of ambition that countries have come forward with.

Transitioning Away from Fossil Fuels: From Incremental to Transformational Change

14. At COP26 (2021), the Glasgow Climate Pact historically called upon Parties to accelerate the development, deployment, and dissemination of technologies, and the adoption of policies, to transition towards low-emission energy systems, including accelerating efforts towards the phase down of unabated coal power and phase out of inefficient fossil fuel subsidies.⁴⁰ It was the first time a COP decision explicitly included a pledge to reduce any fossil fuel.
15. The Sharm el-Sheikh Implementation Plan retained the calls to phase down unabated coal power and phase out inefficient fossil fuel subsidies as adopted in the Glasgow Climate Pact.⁴¹
16. According to the IPCC, to have a reasonable chance of limiting warming to 1.5 degree Celsius by the end of the century, fossil fuel use will need to be reduced drastically. In pathways that limit warming

to 1.5 degrees C with no or limited overshoot, global use of coal falls by 95 percent by 2050, oil declines by about 60 percent, and gas by about 45 percent, assuming significant use of abatement technologies like carbon capture and storage (CCS). Without CCS technologies, coal, oil, and gas pathways show much steeper declines, with global use of coal virtually phased out by 2050.⁴²

17. The International Energy Agency (IEA) also indicates that achieving net zero by mid-century requires a huge decline in the use of fossil fuels. In a net-zero-by 2050-scenario, use of fossil fuels fall from almost four-fifths of total energy supply in 2022⁴³ to slightly over one-fifth by 2050. Remaining fossil fuel use is for goods where carbon is embodied in the product, such as plastics, in facilities equipped with carbon capture usage and storage (CCUS), and in sectors where low-emissions technology options are scarce.⁴⁴
18. The 2023 *Production Gap Report* found that, despite encouraging signs of an emerging clean energy transition, the world's governments still plan to produce more than double the amount of fossil fuels in 2030 than would be consistent with limiting warming to 1.5 degrees Celsius.⁴⁵
19. In recognition of the need for deep, rapid, and sustained reductions in greenhouse gas emissions in line with 1.5 degree C pathways, the COP28 GST decision called on Parties to contribute to, in a nationally determined manner, the **transition away from fossil fuels in energy systems, in a just, orderly, and equitable manner, accelerating action in this critical decade, so as to achieve net zero by 2050 in keeping with the science.**

Barriers and Solutions to the Transition Away from Fossil Fuels

20. Despite repeated observations and exhortations by some that shifting to renewable energy and increasing energy efficiency is “rational,” the “right economic choice,” “easy,” or “obvious,” Parties have nevertheless not yet accelerated the energy transition to the global pace and scale necessary to achieve the goals of the Paris Agreement. First, global production and use of fossil fuels has not declined. Second, some Parties may significantly increase their renewable energy capacity *and* continue to use fossil fuels, with their use increasing in some cases.⁴⁶ It is essential to understand and engage with the reasons for this.

Barriers

21. Parties still face a number of regulatory, economic, social, and technological barriers to implement a wide-scale shift away from fossil fuels. As identified by C2ES,⁴⁷ the GST's *Technical Dialogue Synthesis* report,⁴⁸ and other sources, these challenges include:
 - lack of economic incentives to shift away from high-emission activities⁴⁹
 - lack of availability and access to investments (both public and private finance) for energy systems in developing countries
 - that power sector market design supports priority dispatch for fossil fuel-generated electricity
 - the difficulty of complementing large-scale wind and solar resources with clean firm power (i.e., clean power sources that can be dispatched as needed), energy storage, and expanded transmission infrastructure, due to their variability and location
 - lagging engagement of end-use sectors for reduced fossil fuel consumption via energy efficiency improvements and demand management
 - economic, institutional, socio-political, and capacity barriers, including for the monitoring, enforcement and evaluation of policies
 - permitting and other regulatory hurdles

- high upfront capital costs
 - behavioral inertia in energy consumption patterns
 - the need for public acceptance
 - lack of holistic institutional and policy frameworks for just transition
 - perceived tradeoffs with the Sustainable Development Goals (SDGs).⁵⁰
22. These obstacles are compounded by knowledge gaps regarding the co-benefits of a clean energy transition, such as cleaner air, better-quality housing, and improved health and productivity, as well as the tension between developing a holistic, whole-of-society approach to just transition and the speed and urgency at which greenhouse gas emissions must fall. Stakeholder engagement and social dialogue take time, and approaches are not “one-size-fits-all.” Just transition must take into account and respect varied social, political, economic, and geographical circumstances.
23. The GST decision notes that developing countries need an estimated U.S. \$5.8-5.9 trillion for their efforts to implement their current NDCs for the pre-2030 period (let alone new and more ambitious ones due by February 10, 2025). Climate finance pledged and provided is nowhere near that scale. In this context, the adoption of a new collective quantified goal (NCQG) at COP29 will be vital for setting out a way forward on the scale and type of finance needed to sustain and augment the climate action needed to achieve the goals of the Paris Agreement and net zero by 2050.⁵¹
24. It is also important to keep in mind that while leading companies in green tech and alternative fuels may drive down prices, they may also drive competitors out of business. As the growing intersection of climate and trade policies highlight these issues, governments and multilateral development banks must work together to enable industrial strategies that diversify risk globally.

Solutions

25. A number of high-impact solutions and opportunities to address key challenges have been identified through a wealth of efforts across different fora. The following list draws from C2ES’s work, as well as the High Level Climate Champions’ (HLCs) *2030 Climate Solutions*:⁵²

Actions, solutions, and enablers for the transition away from fossil fuels
<ul style="list-style-type: none"> • Ending investments in new fossil fuel-based generation capacity and accelerating the reduction of the relative share of existing fossil fuel-based energy generation capacity, in a just and equitable manner, including by pricing or capping emissions from the electricity sector (Source: C2ES)
<ul style="list-style-type: none"> • Phasing out inefficient fossil fuel subsidies which distort markets and artificially increase competitiveness of fossil fuels when compared to renewable energy sources (Source: 2030 Climate Solutions)
<ul style="list-style-type: none"> • Canceling debt related to fossil fuel projects, which would enable the early retirement of fossil fuel infrastructure and encourage renewable energy projects (Source: C2ES)
<ul style="list-style-type: none"> • Developing a gradual timeline to phase out fossil fuel subsidies to enable households and firms to adjust over time (Source: C2ES)
<ul style="list-style-type: none"> • Carrying out comprehensive research on the economic sectors and populations likely to be affected by fossil fuel subsidy reform, including existing levels of subsidy support and the distributional impacts of withdrawing it (Source: C2ES)
<ul style="list-style-type: none"> • Redirecting funding from fossil fuel subsidies and investments, carbon pricing instruments,⁵³ and canceled debt payments, to finance the creation and implementation of national just energy transition funds and plans (Source: C2ES)

<ul style="list-style-type: none"> • Conducting extensive consultation campaigns involving all affected stakeholder to facilitate public acceptance and buy-in from different sectors (Source: C2ES)
<ul style="list-style-type: none"> • Facilitating capacity building for workforce development and regulatory/governance bodies within the renewable energy sector (Source: 2030 Climate Solutions)
<ul style="list-style-type: none"> • Ensuring opportunities for community ownership of carbon dioxide removal technologies, facilitating efforts to ensure a just and well-managed transition of skills and expertise into new jobs in the emerging carbon removal sector (Source: 2030 Climate Solutions)
<ul style="list-style-type: none"> • Addressing regulatory barriers to the deployment, scale-up, and use of renewable energy technologies, including grid infrastructure and storage (Source: C2ES), as well as energy efficiency measures.

26. The **HLCs and the Marrakech Partnership for Global Climate Action** identify impactful climate solutions and opportunities for international cooperation.⁵⁴ At COP28, in the context of the conclusion of the GST and building on prior work, the HLCs presented the *2030 Climate Solutions* – an Implementation Roadmap that sets out solutions framed in specific actions, with insights from a wide range of NPS on effective measures being undertaken that need to be scaled up and replicated as well as current gaps that need to be bridged.⁵⁵ The Climate Solutions recommend key actions and means of implementation: seeking to achieve key targets for clean power by 2030.⁵⁶ These recommendations for actions and support overlap with high-impact opportunities and solutions to address barriers to renewable energy, as also identified in work by C2ES.

27. To support a just transition, economic policy tools, including carbon pricing policies, can be effective in some cases. Funds—including those for social, just transition, and other purposes—can enable the sharing of benefits from emissions trading systems, for example, the European Union’s upcoming Social Climate Fund, California’s Climate Credit, and Canada’s Carbon Rebate. Such policies can support climate and social goals.

28. For more detail on barriers and solutions specific to coal, oil and gas, see Annex I.

C. Leadership for Transitioning Away from Fossil Fuels

The Troika, G7, G20, the IEA, and IRENA

29. As an outcome of the UAE Consensus, the COP28 Presidency (UAE) will work together with the incoming Presidencies – Azerbaijan (COP29) and Brazil (COP30) – to drive ambitious collective action, including through the “Roadmap to Mission 1.5C,” an initiative to significantly enhance international cooperation and the international enabling environment to stimulate ambition in the next round of NDCs. This configuration has been called “the Troika.” The Troika, together with the G7 and G20 and including through the Roadmap to Mission 1.5C, broadly seek to drive ambition and enhanced international cooperation.

30. Brazil, in its role as 2024 G20 President, plans to make recommendations on enhancing international cooperation to:⁵⁷

- support developing countries in building institutional capacity to design and implement country platforms, focusing on greenhouse gas emission reductions, resilience-building and achievement of the SDGs
- address associated resource-mobilization challenges, with a view to equipping those plans and platforms with financial means, mechanisms and solutions

- guided by the principles of equity and justice, tackle negative externalities and spillover effects of just transition plans, at the national and international levels.
31. In 2023, the IEA updated its *Net Zero Roadmaps* report and convened five High-Level Dialogues with the COP28 Presidency that were instrumental in building the global consensus needed for the outcomes in Dubai.⁵⁸ In February 2024, IEA Executive Director Dr. Fatih Birol stated that, in response to a call by IEA member country ministers, the IEA was prepared to help lead the implementation of the GST outcomes.⁵⁹ As indicated in their press release, these efforts include:
 - tracking and reporting on the COP28 commitments, in collaboration with UNFCCC
 - supporting countries as they develop the next round of NDCs
 - helping develop solutions to deliver greater financing for clean energy transitions, particularly in emerging and developing economies.⁶⁰
 32. Dr. Birol also announced that the IEA will launch a new roundtable series in partnership with the COP29 Presidency. These roundtables will provide an important venue for countries to share experiences and expertise as they navigate the complexities of developing new NDCs and transition plans, and to establish priorities ahead of COP29 in November 2024.
 33. The IEA has established a website to track progress toward transition away from fossil fuels in energy systems set out in paragraph 28 of the GST decision.^{61,62} The tracker, based on the *IEA's Net Zero Emissions by 2050 Scenario* and latest data analysis, shows where the world currently stands in relation to these objectives, as well as where it would need to be in 2030 to meet them – and be on a pathway to the COP28 target of net zero energy sector emissions by mid-century.
 34. In its April 2024 communique, the G7 Climate, Energy and Environment Ministers reaffirmed the global need to transition away from fossil fuels and called upon IEA to provide recommendations in 2025 to decision makers on how to design a roadmap to implement the transition away from fossil fuels in energy systems, including the technology pathways and timeframes to enable this transition, including to enable reduction in fossil fuels demand and to provide detailed tracking of its progress.⁶³
 35. Since January 2024, IRENA has been hosting policy talks following up on the outcome of COP28. Its first session delved into insights from its *NDCs and renewable energy targets in 2023: Tripling renewable power by 2030* report, with special attention to the financing needs of developing countries.⁶⁴ A second policy talk focused on translating renewable energy pledges into action in Gulf Cooperation Council (GCC) countries and opportunities for the energy transition in the region.⁶⁵
 36. The second part of IRENA's 14th Assembly in Abu Dhabi in April 2024 continued exploring the outcomes from COP28, with a focus on "Infrastructure, Policies and Skills for Tripling Renewables and Accelerating the Energy Transition."⁶⁶ A key outcome was the Utilities for Net Zero Alliance (UNEZA)'s adoption of the UNEZA Roadmap to 2030.⁶⁷ Announced 17 April 2024 at a ministerial roundtable along with a grid infrastructure action plan, the alliance members' Roadmap targets a total increase of renewable energy capacity within their portfolios to 749GW by 2030, an increase of 2.5 times relative to 2023.⁶⁸ The Roadmap focuses on de-risking supply chains, facilitating policy and regulatory support, and mobilizing capital in support of the achievement of the tripling of renewable energy capacity target.
 37. These efforts reflect the need for focused leadership to specifically drive progress on each of the GST targets and signals.

2024 Energy-related Events

38. Energy-related organizations, coalitions, and initiatives may meet or engage at a number of high-level clean energy or energy innovation-related events for the remainder of 2024. These events include:

JANUARY
13-14 January, IRENA General Assembly (Abu Dhabi, UAE)
15 January, Fourteenth Session of the IRENA Assembly, Part 1 (virtual)
FEBRUARY
14-15 February, IEA 2024 Ministerial Meeting (Paris, France)
MARCH
5-6 March, Powering Africa Summit (Washington, DC)
21-22 March, Copenhagen Climate Ministerial (Copenhagen, Denmark) <i>Presentation of the Troika vision and approach and official launch of its work for the year</i>
APRIL
16-18 April, Fourteenth Session of the IRENA Assembly, Part 2 (Abu Dhabi, UAE)
22-25 April, World Energy Congress (Rotterdam, Netherlands)
25-26 April, Petersberg Climate Dialogue (Berlin, Germany) <i>Troika's first majlis with a focus on enabling the implementation of the energy transition outcomes from the first GST</i>
26 April, IEA Global Summit on People-Centred Clean Energy Transitions (Paris, France)
28-30 April, G7 Ministerial Meeting on Climate, Energy, and Environment (Torino, Italy)
MAY
14 May, IEA Summit on Clean Cooking in Africa (Paris, France)
21-23 May, IEA 9 th Annual Global Conference on Energy Efficiency (Nairobi, Kenya)
JUNE
3-13 June, SB60 (Bonn, Germany) <i>Troika informal consultation with Heads of Delegations and NDC Incubation Workshop</i>
14 June, Second COP29-IEA High-Level Energy Transition Dialogue (London, UK)
17-19 June, G7 Summit (Putignano, Puglia, Italy)
26-28 June, IRENA International Energy Workshop (IEW) 2024 (Bonn, Germany)
JULY
22-23 July, Ministerial on Climate Action (Wuhan, China) <i>Troika's second majlis with a focus on supporting the conservation, protection and restoration of forests, sinks and reservoirs, including through synergies between biodiversity and climate</i>
26-27 July, Presidency Heads of Delegation retreat (Shamakhi, Azerbaijan)
AUGUST
12-16 August, NDCs 3.0 Regional Forum for the Pacific (Apia, Samoa)
27-29 August, NDCs 3.0 Regional Forum for Latin America and the Caribbean (Bogota, Colombia)
SEPTEMBER
3-5 September, NDCs 3.0 Regional Forum for Eastern Europe and Central Asia (Istanbul, Türkiye)
5-6 September, Fifth Global Conference on Strengthening Synergies between the Paris Agreement and the 2030 Agenda for Sustainable Development (Rio de Janeiro, Brazil) <i>Troika's third majlis with a focus on galvanizing political momentum to enhance adaptation action and global resilience by 2030, including by addressing the adaptation finance gap</i>
TBD September, Presidency High-Level Energy Dialogue co-hosted with IEA (New York, New York)
10-24 September, UN General Assembly (New York, NY) <i>A high-level Troika event to showcase the leadership of early movers of 1.5 aligned NDCs</i>

22-23 September, Summit of the Future (New York, NY)
23-25 September, NDCs 3.0 Regional Forum for the Middle East and North Africa (Tunis, Tunisia)
30 September to 2 October, NDCs 3.0 Regional Forum for Asia (Bangkok, Thailand)
OCTOBER
1-3 October, Joint Ministerial for Clean Energy Ministerial and Mission Innovation (CEM15 and MI-9) (Foz do Iguaçu, Brazil)
4-5 October, Fourth Global Dialogue and Fourth Investment-Focused Event under the Sharm el-Sheikh Mitigation Ambition and Implementation Work Programme (Sharm el-Sheikh, Egypt)
7-9 October, NDCs 3.0 Regional Forum for Africa (Kigali, Rwanda)
10-11, Pre-COP (Baku, Azerbaijan) <i>Troika High-level Dialogue to focus on NDC ambition and implementation to date</i>
TBD October, Presidency's Methane Workshop co-hosted with IEA (Baku, Azerbaijan)
23-25 October, G20 Joint Meeting of Climate Change and Finance Ministers (Washington, DC) <i>High-level Troika even on climate finance and investment frameworks to enhance ambition and enable implementation of NDCs</i>
22-27 October, Annual Meetings of the World Bank Group and the International Monetary Fund (IMF) (Washington, DC)
NOVEMBER
TBD November, Presidency Methane and non-CO2 greenhouse Gases Summit (Baku, Azerbaijan)
11-24 November, COP29 (Baku, Azerbaijan) <ul style="list-style-type: none"> • <i>A leaders-level event to focus on taking stock of the Troika's work and opportunities for strengthened ambition in 2025</i> • <i>High-level ministerial roundtable for the MWP.</i>
18-19 November, G20 Summit (Rio de Janeiro, Brazil)
DECEMBER
10-11 December, 21st Replenishment of the International Development Association (IDA21) Final Pledging and Replenishment Meeting

Capacity Building and Support for the Development of Just Transition Policies and NDCs

39. Other initiatives can provide critical capacity-building support for the development of climate policy and NDCs. One key initiative is **UN Development Programme (UNDP)'s Climate Promise**.⁶⁹ Climate Promise leverages Parties' NDCs and brings together UNDP's infrastructure, networks and breadth of substantive offers to provide comprehensive support on NDC implementation. UNDP provides support to help countries take bold action to reduce their emissions, increase their resilience to climate impacts and support sustainable development priorities.
40. In April 2024, UNDP unveiled the next stage of Climate Promise, Climate Promise 2025, which will support countries in developing and delivering their pledges and draws on UNDP's newly established Climate Hub.⁷⁰ Climate Promise 2025 will link climate diplomacy and thought leadership with climate action and sustainable development at national and local levels to align the next generation of NDCs with the Paris Agreement goals.
41. Another key initiative is the **NDC Partnership**.⁷¹ Leveraging more than 200 members and more than 80 institutions, the Partnership responds to requests for support needed to translate identified NDC implementation priorities into actionable policies and programs. Based on these requests, the membership offers a tailored package of expertise, technical assistance, and funding. This collaborative response provides developing countries with efficient access to a wide range of

resources to adapt to and mitigate climate change and foster more equitable and sustainable development.

42. In June 2024, the NDC Partnership and the UNFCCC secretariat launched the **NDC 3.0 Navigator**. The NDC 3.0 Navigator is an interactive tool designed to support countries in raising NDC ambition and accelerating the implementation of the next round of NDCs. It brings together expert-created strategies, resources, and country insights to support countries in updating their NDCs.⁷² The NDC Navigator also set out strategies for Parties translating “global efforts” on the low-carbon energy transition, phasing down unabated coal power, and phasing out of inefficient fossil fuel subsidies from the first GST as well as ensuring representation of all relevant mitigation sectors into national mitigation efforts.⁷³
43. In July 2024, UN Environment Programme, the UNDP and the NDC Partnership, in collaboration with the UNFCCC Secretariat announced that they are organizing **NDCs 3.0 Regional Fora**.⁷⁴ The closed-door Fora will use insights from COP28 and the GST to focus on mitigation options, adaptation solutions and inclusion of super pollutants (short-lived non-carbon dioxide pollutants), such as methane and black carbon in the NDCs. Participants, invited from government ministries engaged in NDC development and implementation, will engage in peer-learning, explore innovative financing models and share how to develop policy roadmaps that lead to implementation. The Fora will be a place to discuss how ambitious sectoral targets can lead to transformational change and investment plans.
44. Within the UNFCCC, the Technology Executive Committee (TEC), as the policy arm of the Technology Mechanism, also provides important capacity building support. TEC focuses on identifying policies that can accelerate the development and transfer of low-emission and climate resilient technologies. In May 2024, TEC agreed to develop a policy brief to provide concrete policy and technology options to reduce emissions from hard-to-abate industries and will host a Technology Day at COP29 to advance the inclusion of those industries in updated NDCs.⁷⁵
45. Other platforms and bi- or pluri-lateral partnerships offer bespoke approaches or specific finance for the energy transition. For example, **Just Energy Transition Partnerships (JETPs)** are early-stage cooperative finance arrangements, targeted at a small number of heavily coal-dependent emerging economies, with the aim of tailored support to help them achieve a just energy transition.⁷⁶ The **Energy Transition Accelerator Financing (ETAF) platform** is a multistakeholder platform that is dedicated to implementing renewable energy projects to accelerate the energy transition in emerging economies.⁷⁷
46. A number of organizations, initiatives, and programs specifically provide capacity-building support for Parties’ just transition efforts. For more detail, see “Annex II.”

Recommendations

47. Paragraph 28 of the GST decision sets out a package of critical mitigation targets and signals. The achievement of no one signal or target alone will result in the deep, rapid, and sustained reductions in greenhouse gas emissions in line with 1.5 degree C pathways.
48. To drive the achievement of the transition away from fossil fuels in energy systems, in a just, orderly, and equitable manner, accelerating action in this critical decade, so as to achieve net zero by 2050 in keeping with the science, **Parties should:**

- **commit in their NDCs to stop building new unabated coal-fired power generation plants**
- **encourage or require oil and gas companies to increase transparency in their transition strategies**, by measuring, monitoring, publicly reporting and independently verifying their greenhouse gas emissions, **including on methane**, and their performance and progress in reducing emissions from their operations, with the aims of:⁷⁸
 - joining broad coalitions with ambitious targets
 - informing mid-and long-term transition strategy targets to diversify and/or to ultimately shut down oil and gas production
- **integrate just transition strategies or plans within short- and long-term climate plans**, such as NDCs, LT-LEDS, and NAPs.

Coal

49. With respect to coal, embedding commitments in NDCs to stop building new unabated coal-fired power generation plants will begin to add needed weight to the commitment made in Glasgow to accelerate efforts toward the phase-down of unabated coal power. Committing to not build coal-fired power plants helps avoid legal, social, and financial complications of locking in their use.⁷⁹ And shutting down existing unabated coal-fired power generation plants early would further advance progress toward the Glasgow aim. Countries like Portugal, for example, have already reached zero coal power and others are phasing unabated coal out quickly.⁸⁰
50. In addition, reusing existing coal-fired power plant sites for solar PV, battery energy storage, thermal energy storage, and advanced reactors can provide significant economic benefits to local communities and drive down carbon emissions and energy costs. For example, Canada repurposed existing coal plant infrastructure to build a 44-MW solar power station in Nanticoke, Ontario; Germany also created 80,000 jobs in coal mining regions through solar parks.⁸¹ Finally, including such information in NDCs may invite opportunities for the type of investment needed to shift away from reliance on coal power, whether through JETP-style partnerships or country platforms, or other forms of economic assistance.⁸²

Oil and Gas

51. Methane accounts for half of the total emissions from oil and gas operations.⁸³ According to the IEA, cutting methane emissions from the energy sector by 75 percent by 2030 is one of the least-cost opportunities to limit global warming in the short term.⁸⁴ Without efforts to reduce methane emissions from fossil fuel supply, global energy sector carbon dioxide emissions would need to reach net zero by around 2045, with important implications for equitable pathways.⁸⁵
52. Companies that have announced a target to diversify their activities into clean energy account for just under one-fifth of current oil and gas production.⁸⁶ And less than half of current global oil and gas output is produced by companies that have targets to reduce their emissions.⁸⁷ Verification and accountability mechanisms increase transparency, ensuring that actors are taking the necessary steps toward their goals. It is an important prerequisite to join existing initiatives, such as the Global Methane Pledge,⁸⁸ Oil and Gas Decarbonisation Charter,⁸⁹ UN Environment Programme's Oil & Gas Methane Partnership 2.0 (OGMP 2.0).⁹⁰ Verification and accountability mechanisms can enable Parties and companies to progress toward measurement-based estimates of emissions, which can inform strategies for how they will implement pledges through these initiatives effectively and rapidly. For example, oil and gas company Eni deployed leak detection and repair (LDAR) across its assets and

gas valorization projects, which have reduced upstream fugitive methane emissions by about 17 percent from 2022–23 and reduced routine gas flaring by 8 percent.⁹¹

Just Transition

53. NDCs, NAPs, and LT-LEDS increasingly reference just transition (see paragraph 12). However, to ensure the active involvement of marginalized groups, those impacted by the transition, and youth in planning and implementation, Parties should develop comprehensive policy frameworks that align the just transition with national priorities.⁹² Doing so can also empower local communities to design and implement their own transition plans. For example, a crosscutting social pillar in Chile’s NDC aims to minimize potential negative impacts of climate action on vulnerable groups.⁹³ Chile has further leveraged national public-private coal phase-out agreements to inform the design of its first just energy transition strategy, published in December 2021.⁹⁴
54. Parties can consider how the operationalization of the UAE Just Transition Work Programme can be fully utilized, along with key supporting organizations and initiatives (see Annex I), as a capacity-building forum for the development of just transition strategies or plans that can be incorporated in NDCs, LT-LEDS, and NAPs, as well as development plans.
55. The Troika, as a leader on ambition, can, in turn, leverage its role to support this cooperative leadership by:
- highlighting the HLCs’ Clean Power Breakthrough and other relevant work and further empowering the HLCs to enhance NPS support and/or engagement on achieving the targets and signals from paragraph 28 of the GST decision
 - exploring with Parties what a 1.5 degree C-aligned, just energy transition that achieves the targets and signals from paragraph 28 of the GST decision looks like and what it may require in various regions
 - enabling collaboration and sharing best practice around solutions for the implementation of net-zero pathways for different fossil fuels
 - partnering with energy, labor, and economic development-focused NGOs, including at the regional level, to accelerate sound policy adoption and project implementation
 - working with UNDP Climate Promise and the NDC Partnership in building capacity for renewable energy policies and measures and just transition strategies undergirding NDCs
 - encourage countries to inform the United Nations Secretary General (UNSG)’s SDG Actions Platform with relevant just energy transition multi-stakeholder initiatives and report progress made on relevant SDG indicators
 - highlighting key capacity-building fora, including the UAE Just Transition Programme, to develop just energy transition strategies that can inform national climate targets and policies.⁹⁵

Ongoing Leadership is Needed

56. The Troika and the Roadmap to Mission 1.5C provide a promising model of collaborative leadership that can provide continuity and a trajectory for enhanced international cooperation across critical years. The Troika’s high-level events planned for the latter half of 2024 can be critical for calling upon ministers and government leaders to lead on action to transition away from fossil fuels and invest in developing country efforts to do so. COP29 could be a key moment to review Parties’ progress toward

achieving achieve the transition away from fossil fuels in energy systems, after which the Troika could lay out a clear roadmap for events and action for 2025.

57. The near-term goal is action and implementation that inform enhanced NDCs and ambition to and up through the deadline for new NDCs by February 10, 2025. In the longer-term, such leadership will be critical for informing subsequent implementation.
58. The outcome of the negotiations on the NQCG in 2024 and broader financial developments will impact the environment for international cooperation. Once there has been sufficient time to analyze the NDCs in the annual update of the NDC synthesis report that will be made available ahead of COP30, it will become clearer whether the GST will have succeeded.⁹⁶ But this also means that Belém will not be the “NDC COP.”
59. As such, 2025 will demonstrate how much more Parties are willing to commit to achieving the Paris goals. It is also possible that NDCs will reveal themselves to more usefully be investment plans or tools.⁹⁷
60. The year 2025 will also mark the year that the Paris Agreement’s enhanced transparency framework will be fully operational. New processes, like the facilitative multilateral consideration of process, provides opportunities for Parties to share best practices and lessons learned in implementing their NDCs.
61. Troika leadership and the incoming Brazilian Presidency must utilize the Roadmap to 1.5C and the outcomes of COP29 to skillfully build on the picture of progress drawn earlier in 2025 to a successful outcome at COP30 that nevertheless remains critical to ambition and enhanced international cooperation in 2026. COP30 in Belém should not be seen as a cliff edge, but a steppingstone to COP31 and beyond. In 2026, the second GST process begins again.

Conclusion

62. While there is a strong case for clear leadership to respond to the call to transition away from fossil fuels, there is also a need to be inclusive. Clearer leadership on implementing and coordination on the transition away from fossil fuels, including how efforts are enacted on the ground, may elicit reactions that Parties are “being told what to do.” As such, the national determinedness of NDCs and their domestic implementation must be clearly reiterated and respected.
63. At the same time, the value of clear leadership on the transition away from fossil fuels will enable far greater and faster implementation than would otherwise be the case. In addition, tracking progress toward the achievement of the target at COP29 and COP30 is crucial to generate further momentum. Early action must be captured in the next round of NDCs due by February 10, 2025, laying a strong foundation for further efforts.

Annex I: Fossil Fuels in the Energy System: Coal, Oil and Gas

64. This annex takes a closer look at the gap between current use of coal, oil, and gas and what is needed to reach net zero by 2050. It also looks at barriers and solutions specific to coal, oil, and gas.

Coal

65. As the largest energy source for electricity generation, steelmaking, and cement production, coal maintains a central role in the world economy. At the same time, coal is the largest source of man-made carbon dioxide emissions.⁹⁸ In 2022, coal accounted for 27.6 percent of global power supply, while constituting over 40 percent of all energy sector carbon dioxide emissions.⁹⁹

66. To reach net zero by 2050, demand for coal would need to fall by 45 percent by 2030 and by 90 percent to 2050; by 2040, there would need to be no unabated coal power anywhere in the world.¹⁰⁰ This means that coal demand would fall from around 5,800 million tonnes of coal equivalent (Mtce) in 2022 to 3,250 Mtce by 2030 and around 500 Mtce by 2050.¹⁰¹

67. According to the IEA, clean energy deployment since 2019 has helped to avoid coal demand of around 580 million tonnes of coal equivalent per year on average. However, global coal demand grew in 2023, driven by increased electricity demand, despite rapid growth in renewables-based power generation.¹⁰²

Barriers

68. Parties face a number of regulatory, economic, social, and technological barriers to implement a wide-scale shift away from coal use. As identified by C2ES¹⁰³ as well as the GST's *Technical Dialogue Synthesis report*,¹⁰⁴ and other sources, these challenges include:

- negative social impacts stemming from plant shutdowns, including loss of jobs and livelihoods, which delay the public acceptance of renewable energy capacity¹⁰⁵
- elevated cost of capital and absence of fiscal frameworks enabling the transition to renewable energy sources¹⁰⁶
- a challenging post-COVID and energy crisis environment which has exacerbated real-economy condition, intensifying inequality and energy poverty¹⁰⁷
- lack of grid stability or robust grid infrastructure
- policy measures to enable systemic transformation across multiple sectors, including industry, transport, buildings, energy and other sectors.

Solutions

69. A number of high-impact solutions and opportunities to address key challenges have been identified through a wealth of efforts across different fora. The following list draws from C2ES's work as well as the HLC's *2030 Climate Solutions*:¹⁰⁸

Actions, solutions, and enablers for the transition away from coal
<ul style="list-style-type: none"> • Supporting R&D efforts that help improve inventory data and clean technology alternatives to coal in some key industrial applications (e.g., steel, cement). (Source: C2ES)
<ul style="list-style-type: none"> • Significantly increasing concessional financing instruments by 2030 compared to 2023 levels, supporting a just transition in the early phase-out of coal. (Source: 2030 Climate Solutions)

Oil and Gas

70. Natural gas can be considered a “bridge fuel” from coal. However, with current technologies, not all gas use can be easily replaced with renewable energy. Natural gas demand was 4,150 billion cubic meters (bcm) in 2022.¹⁰⁹ This marks an increase from approximately 3,700 bcm recorded in 2017.¹¹⁰
71. Oil is mostly used in transportation. It is also a primary ingredient for plastics and other chemicals. The recorded demand in 2022 was 96.5 million barrels per day (mb/d).¹¹¹ This does not represent a significant change from the demand recorded in 2017.¹¹² Under a current Stated Policy Scenario (STEPS), that is, a scenario considering existing and announced policies, oil demand will reach a maximum of 102 mb/d, to then decline to 97 mb/d in 2050.¹¹³ The decline in oil use in cars, buildings, and power generation is expected to be offset by increased oil use for heavy-duty vehicles, aviation, and petrochemicals.¹¹⁴
72. To reach net zero by 2050, demand for oil and gas would need to decline by about 20 percent by 2030—“fast enough that no new long lead time conventional oil and gas projects need to be approved for development.”¹¹⁵ Demand for natural gas would need to drop to 3,400 bcm in 2030 and 900 bcm in 2050.¹¹⁶ Oil would need to decline to 77 mb/d by 2030 and 24 mb/d by 2050.¹¹⁷

Barriers

73. Parties face a number of regulatory, economic, social, and technological barriers to implement a wide-scale shift away from oil and gas. As identified by C2ES, these challenges include:¹¹⁸
- absence of cost-competitive or low-cost, low- or zero-emissions fuel alternatives for oil and gas in some sectors, e.g., aviation and marine shipping
 - lack of infrastructure that may prevent captured gas from being brought to market, especially where gas is co-produced with oil
 - lack of incentives and technical expertise for abatement, including in contexts where the environmental costs of emissions are not considered¹¹⁹
 - energy supply disruptions and crises.¹²⁰

Solutions

74. A number of high-impact solutions and opportunities to address key challenges have been identified through a wealth of efforts across different fora. The following list draws from C2ES’s work as well as the HLC’s *2030 Climate Solutions*:¹²¹

Actions, solutions, and enablers for the transition away from oil and gas
<ul style="list-style-type: none"> • Deploying methane emissions reduction measures and technologies at oil and gas production and refining sites, including measures that put a stop to all non-emergency flaring and venting, and universal adoption of monthly or continuous leak detection and repair programs. (Source: 2030 Climate Solutions)
<ul style="list-style-type: none"> • Committing to more ambitious green hydrogen development, creating opportunities for new industries to grow, and increasing demand for skilled jobs. (Source: 2030 Climate Solutions)
<ul style="list-style-type: none"> • Supporting R&D efforts that enable remote monitoring of methane and help improve inventory data and clean technology alternatives to coal in some key industrial applications (e.g., steel, cement). (Source: C2ES)

Transitioning Away from Fossil Fuels: Clean Power Supply and Decarbonization of Energy Uses

75. A just transition will require increased supply of clean power and electricity demand management through energy efficiency improvements including behavioral change. Clean power demand from end-use sectors and the electrification of energy will enable the transition away from fossil fuels, coupled with adequate policy support.¹²²

Barriers

76. Parties face a number of regulatory, economic, social, and technological barriers to implement clean power supply and decarbonize energy use. As identified by HLCs¹²³ and IEA, these challenges include:

- [Grids and Storage] lack of robust electricity grids that can cater for the growth of electrification across the building, transportation, and industrial sectors¹²⁴
- [Cooling and Built environment] continued increase in electricity demand for cooling, as record high temperatures are recorded globally¹²⁵
- [Transport] lack of policy support and adequate urban planning for less carbon-intensive travel options, such as walking, cycling, and public transport¹²⁶
- [Industry] Industrial energy consumption overwhelmingly relies on fossil fuels, and by-products of industrial processes release substantial amounts of greenhouse gas emissions; currently commercially available technology cannot decarbonize industrial processes from heavy industries, such as iron and steel, cement, chemicals, and aluminum¹²⁷

Solutions

77. A number of high-impact solutions and opportunities to address key challenges have been identified through a wealth of efforts across different fora. The following list draws from HLCs' work as well as the IEA:

- [Transport] Implementing urban planning policies and practices that foster widespread accessibility of cleaner transportation technologies and infrastructure, including electric cars and trucks. (Source: 2030 Climate Solutions)
- [Transport] Catalyzing further innovation with R&D to make zero-emission vehicles (ZEV) and other transportation technologies affordable and sustainable, facilitating the scenario of widespread ownership of ZEVs as "the new normal."¹²⁸ (Source: IEA)
- [Transport] Improving the fuel efficiency of low-emissions vehicles, contributing to an overall lower carbon footprint. (Source: 2030 Climate Solutions)
- [Built Environment] Implementing minimum energy performance standards (MEPS) to reduce energy consumption through, e.g., energy efficient appliances. (Source: 2030 Climate Solutions)
- [Clean Cooking] Channeling capital for universal clean cooking access, reducing health challenges, and fostering economic benefits, especially in Sub-Saharan Africa (Source: 2030 Climate Solutions)
- [Industry] Promoting circularity and a more efficient use of resources in industrial practices, decreasing the overall climate impact of heavy industries (Source: 2030 Climate Solutions).

Annex II: Helping Parties Transition “in a Just, Orderly and Equitable Manner”

78. A key element of the signal to “transition away from fossil fuels in energy systems,” is that it ought to happen in “a just, orderly and equitable manner”—it must be a just transition.¹²⁹ The concept of just transition recognizes that while climate change and environmental degradation pose significant challenges to economic growth and employment, now and in the future, a shift to a green economy that is not well-managed through just transition processes and policies could increase social inequality and disadvantage workers and businesses in affected sectors. A well-managed just transition, however, can provide sustainable development benefits beyond mitigation, such as energy cost savings, job creation, enhanced energy security, and improved air quality and health.¹³⁰
79. The International Labor Organization (ILO), the UN agency tasked with advancing social and economic justice through international labor standards, defines just transition as “[g]reening the economy in a way that is as fair and inclusive as possible to everyone concerned, creating decent work opportunities and leaving no one behind.”¹³¹ However, what it may mean in practical terms to governments and communities varies by context and can take many approaches, depending on national and local circumstances.
80. The June 2024 World Economic Forum report, *Fostering Effective Energy Transition 2024*, indicates that the energy transition is progressing but has lost momentum in the face of increasing global uncertainty.¹³² As Parties incorporate just transition in the context of achieving the goals of the Paris Agreement, Parties have a number of resources to consider as they plan and implement their just transition policies.
81. Launched in 2013, **Partnership for Action on Green Economy (PAGE)** brings together five United Nations agencies—UN Environment Programme, UNDP, ILO, UN Industrial Development Organization, and UN Institute for Training and Research—whose expertise and support assist and lead partner countries toward their transition to an “inclusive green economy” by providing policy advice, assessments, capacity building, and analytical tools outputs.¹³³
82. In 2015, the ILO issued its **Guidelines for a Just Transition**. The guidelines cover a variety of policy areas to address environmental, economic, and social sustainability simultaneously: macroeconomic and growth policies; industrial and sectoral policies; enterprise policies; skills development; occupational safety and health; social protection; active labor market policies and rights; social dialogue; and tripartism.¹³⁴
83. At the 2019 United Nations Climate Action Summit, 46 countries committed to place jobs at the heart of ambitious climate action and to promote a just transition. UN Secretary-General António Guterres launched the **Climate Action for Jobs Initiative** to bring together governments, workers’ and employers’ organizations, international institutions, academia, and civil society to deliver change.¹³⁵ It is led by the ILO.
84. In May 2021, in response to Member calls to more strongly address the equity and justice elements of the energy transition, IRENA adopted a **Collaborative Framework on “Just and Inclusive Energy Transitions.”**¹³⁶ Leveraging IRENA’s work, the Collaborative Framework aims to bring countries and other relevant stakeholders together to identify priority areas and concrete actions and foster

international collaboration to understand how to promote and support just and inclusive energy transitions.

85. In 2022, the Organisation for Economic Co-operation and Development (OECD)'s Development Centre published a framework for extractive-based countries in transition, ***The Equitable Framework and Finance for Extractive-based Countries in Transition (EFFECT)***.¹³⁷ The framework identifies ways policymakers, industry, and financial institutions can assist fossil fuel producers and mineral-rich developing countries in developing low-carbon transition pathways.
86. At IEA's Global Summit on People-Centred Clean Energy Transitions in April 2024, the IEA launched a new **Global Commission on People-Centred Clean Energy Transitions: Designing for Fairness**.¹³⁸ The Commission will develop actionable policy recommendations for energy and climate ministers and international decision-makers on how to fully integrate the principle of fairness into the design of all clean energy policies.¹³⁹ In May 2024, the IEA's published a new special report, ***Strategies for Affordable and Fair Clean Energy Transitions***, which provides a comprehensive evidence base for a discussion on how to pay for clean energy transitions and how the costs and benefits will be shared.¹⁴⁰ The report takes a pragmatic look at policy approaches that can safeguard affordability and fairness as transitions advance
87. The private sector, NGOs, trade unions, workers' associations, philanthropic organizations, foundations, and financial institutions widely support international governmental organizations and Parties through **voluntary cooperative initiatives** that acknowledge and incorporate just transition approaches. Examples of such initiatives include the Global Methane Hub,¹⁴¹ the Powering Past Coal Alliance,¹⁴² Sustainable Energy for All (**SEforALL**),¹⁴³ and the Breakthrough Agenda.¹⁴⁴
88. The HLC's **2030 Climate Solutions**, which bring together existing Climate Action frameworks and solutions from the Marrakech Partnership and its flagship campaigns (Race to Zero and Race to Resilience), provide actionable and collaborative solutions for just energy and industry transitions.¹⁴⁵
89. In the context of the Paris Agreement itself, at COP27 Parties launched a work program on just transition to discuss pathways to achieve the goals of the Paris Agreement. The work program builds on and complements both the elements and structure of other work programs, as well as the workstreams and bodies under the UNFCCC and the Paris Agreement where just transition is also being addressed. At COP28, Parties held the first annual high-level ministerial roundtable on just transition and adopted the elements of the **UAE Just Transition Work Programme**. As the work program is operationalized, the outcome of its work will inform the second global stocktake.

Endnotes

- ¹ United Nations Framework Convention on Climate Change [hereinafter UNFCCC], *Outcome of the first global stocktake*, Decision 1/CMA.5, ¶ 79 (December 13, 2023), <https://unfccc.int/documents/637073>.
- ² UNFCCC, *Outcome of the first global stocktake*, Decision 1/CMA.5, ¶ 170. See also, UNFCCC, *Paris Agreement*, Art. 4.9, conclusion date: December 12, 2015, United Nations Treaty Series Online, registration no. I-54113, https://unfccc.int/sites/default/files/english_paris_agreement.pdf; UNFCCC, *Adoption of the Paris Agreement*, 1/CP.21, ¶¶ 22-25 (January 29, 2016), <https://unfccc.int/resource/docs/2015/cop21/eng/10a01.pdf#page=2>; UNFCCC, *Common time frames for nationally determined contributions referred to in Article 4, paragraph 10, of the Paris Agreement*, Decision 6/CMA.3, ¶ 2 (March 8 2022), https://unfccc.int/sites/default/files/resource/CMA2021_10_Add3_E.pdf (Encourages Parties to communicate in 2025 a nationally determined contribution with an end date of 2035, in 2030 a nationally determined contribution with an end date of 2040, and so forth every five years thereafter); UNFCCC, *Report on the 11th meeting of the Paris Agreement Implementation and Compliance Meeting*, PAICC/2024/M11/4 (April 17-19, 2024), ¶ 19, https://unfccc.int/sites/default/files/resource/PAICC_11_meeting_report.pdf.
- ³ *Features and Normative Requirements for Nationally Determined Contributions* (Arlington, VA: Center for Climate and Energy Solutions [hereinafter C2ES], June 2024), <https://www.c2es.org/wp-content/uploads/2024/06/20240619-C2ES-NDC-Features-Normative-Requirements.pdf>.
- ⁴ UNFCCC, *Paris Agreement*, Arts. 3, 4.3. UNFCCC, *Further guidance in relation to the mitigation section of decision 1/CP.21*, Decision 4/CMA.1, Annex I, ¶ 4(c) (19 March 2019), https://unfccc.int/sites/default/files/resource/cma2018_3_add1_advance.pdf.
- ⁵ UNFCCC, *Paris Agreement*, Art. 4.2.
- ⁶ UNFCCC, *Paris Agreement*, Arts. 3, 4.3. UNFCCC, *Further guidance in relation to the mitigation section of decision 1/CP.21*, Decision 4/CMA.1, Annex I, ¶ 6.
- ⁷ UNFCCC, *Paris Agreement*, Arts. 3, 4.3. UNFCCC, *Further guidance in relation to the mitigation section of decision 1/CP.21*, Decision 4/CMA.1, Annex I, ¶ 7.
- ⁸ UNFCCC, *Further guidance in relation to the mitigation section of decision 1/CP.21*, Decision 4/CMA.1, Annex I, ¶ 4(c).
- ⁹ UNFCCC, *Outcome of the first global stocktake*, Decision 1/CMA.5, ¶ 39.
- ¹⁰ UNFCCC, *Outcome of the first global stocktake*, Decision 1/CMA.5, ¶ 6.
- ¹¹ UNFCCC, *Outcome of the first global stocktake*, Decision 1/CMA.5, ¶ 171.
- ¹² UNFCCC, *Outcome of the first global stocktake*, Decision 1/CMA.5, ¶ 179.
- ¹³ Sultan al Jaber, Mukhtar Babayev, and Marina Silva, “COP Presidencies Troika Letter to Parties,” March 2024, https://unfccc.int/sites/default/files/resource/presidencies_troika_letter_to_parties.pdf.
- ¹⁴ Sultan al Jaber, Mukhtar Babayev, and Marina Silva, “Troika Second Letter to Parties and Observers,” July 23, 2024, https://unfccc.int/sites/default/files/resource/troika_second_letter_to_parties_and_observers_july_2024.pdf.
- ¹⁵ UNFCCC, *Outcome of the first global stocktake*, Decision 1/CMA.5, ¶ 28(d).
- ¹⁶ See, e.g., Kaveh Guilanpour et al., *A Solutions-oriented Approach to the Paris Agreement’s Global Stocktake* (Arlington, VA: C2ES, November 2023), <https://www.c2es.org/document/a-solutions-oriented-approach-to-the-paris-agreements-global-stocktake/>; UNFCCC, *Technical dialogue of the first global stocktake: Synthesis report by the co-facilitators on the technical dialogue* (September 8, 2023), https://unfccc.int/sites/default/files/resource/sb2023_09E.pdf; United Nations Climate Change High-Level Champions [hereinafter HLCs], and the Marrakech Partnership for Global Climate Action, *2030 Climate Solutions: Implementation Roadmap* (Bonn, Germany: UNFCCC, December 2023) <https://climatechampions.unfccc.int/wp-content/uploads/2023/12/2030-Climate-Solutions-Publication-Implementation-roadmap.pdf>,
- ¹⁷ Joanna Gill, “Energy efficiency: the net zero no brainer that has come of age,” *Context*, January 19, 2024, https://www.context.news/net-zero/energy-efficiency-the-net-zero-no-brainer-that-has-come-of-age?utm_source=newsletter&utm_medium=email&utm_campaign=context-climate.

¹⁸ UNFCCC, *Outcome of the first global stocktake*, Decision 1/CMA.5, ¶ 28.

¹⁹ A new study finds that repurposing retired coal power plants to generate renewable energy can provide significant economic benefits to local communities and drive down carbon emissions and energy costs. Francesco Tassi and Noah Kittner, *Repurposing coal plants—regional economic impacts from low carbon generation* (Chapel Hill, NC: Renewable and Sustainable Energy Reviews Vol. 199, July 2024), <https://doi.org/10.1016/j.rser.2024.114467>. See also, “Engie to build first standalone BESS in Chile at decommissioned coal plant,” April 11, 2024, Energy Storage News, <https://www.energy-storage.news/engie-to-build-first-standalone-bess-in-chile-at-decommissioned-coal-plant/>.

²⁰ UNFCCC, *Outcome of the first global stocktake*, Decision 1/CMA.5, ¶ 28(f) (March 15, 2024), <https://unfccc.int/documents/637073>.

²¹ International Energy Agency [hereinafter IEA], “Executive Summary” in *Net Zero Roadmap: A Global Pathway to Keep the 1.5 °C Goal in Reach* (Paris, France: 2023), <https://www.iea.org/reports/net-zero-roadmap-a-global-pathway-to-keep-the-15-0c-goal-in-reach/executive-summary>.

²² The Global Methane Pledge is an initiative launched in 2021, to reduce global methane emissions and keep the goal of limiting warming to 1.5 degrees Celsius within reach. The United States, European Union and over 110 countries have signed the pledge, which represents more than 70 percent of the global economy and half of anthropogenic methane emissions; “Global Methane Pledge,” accessed September 24, 2024, <https://www.globalmethanepledge.org/>.

²³ Oil and Gas Decarbonization Charter, <https://www.tralac.org/documents/resources/external-relations/united-nations/5138-cop28-oil-and-gas-decarbonization-charter/file.html>.

²⁴ “The Oil & Gas Methane Partnership 2.0 (OGMP 2.0),” UN Environment Programme, accessed September 16, 2024, https://www.unep.org/topics/energy/methane/international-methane-emissions-observatory/methane-alert-and-response-0?gad_source=1&gclid=CjwKCAjwuMC2BhA7EiwAmJKRrFY2BsWv TYZvTQhKjDnfANVRaQo3K ViiDfjMpqUTbfSdrjVgFhEhoCnXYQAvD BwE80.

²⁵ The process of increasing commitment to climate action through the GST to inform climate action—including updating nationally determined contributions (NDCs) and national adaptation plans — is part of what is known as the Paris Agreement’s “ambition cycle.” It also includes the “enhanced transparency framework,” the process for countries to gather and report greenhouse gas inventory data, track their progress against the overarching goals of the Paris Agreement and their own NDCs and deliver updates on the financial support they are providing or receiving. Parties are required to submit their first biennial transparency report (BTR1) and national inventory report by the end of December 2024.

²⁶ UNFCCC, *Paris Agreement*, Arts. 14.1, 14.2.

²⁷ UNFCCC, *Paris Agreement*, Art. 14.3.

²⁸ UNFCCC, *Outcome of the first global stocktake*, Decision 1/CMA.5, ¶¶ 9-10.

²⁹ UNFCCC, *Outcome of the first global stocktake*, Decision 1/CMA.5, ¶ 170. See also, UNFCCC, *Paris Agreement*, Art. 4.9; UNFCCC, *Adoption of the Paris Agreement*, 1/CP.21, ¶¶ 22-25; UNFCCC, *Common time frames for nationally determined contributions referred to in Article 4, paragraph 10, of the Paris Agreement*, Decision 6/CMA.3, ¶ 2 (Encourages Parties to communicate in 2025 a NDC with an end date of 2035, in 2030 a NDC with an end date of 2040, and so forth every five years thereafter).

³⁰ UNFCCC, *Nationally determined contributions under the Paris Agreement: Synthesis report by the secretariat*, ¶ 32 (Bonn, Germany: UNFCCC, November 14, 2023), <https://unfccc.int/documents/632334>.

³¹ UNFCCC, *Nationally determined contributions under the Paris Agreement: Synthesis report by the secretariat*, ¶ 172.

³² UNFCCC, *Nationally determined contributions under the Paris Agreement: Synthesis report by the secretariat*, ¶ 184(e).

³³ UNFCCC, *Nationally determined contributions under the Paris Agreement: Synthesis report b* ¶ 124.

³⁴ UNFCCC, *Nationally determined contributions under the Paris Agreement: Synthesis report by the secretariat*, ¶ 120.

- ³⁵ UNFCCC, *Nationally determined contributions under the Paris Agreement: Synthesis report by the secretariat*, ¶ 122.
- ³⁶ UNFCCC, *Nationally determined contributions under the Paris Agreement: Synthesis report by the secretariat*, ¶ 123.
- ³⁷ UNFCCC, *Nationally determined contributions under the Paris Agreement: Synthesis report by the secretariat*, ¶ 185(c).
- ³⁸ UNFCCC, “First Dialogue on Just Transition Tackles Challenges, Seeks International Cooperation,” UNFCCC, June 7, 2024, <https://unfccc.int/news/first-dialogue-on-just-transition-tackles-challenges-seeks-international-cooperation>.
- ³⁹ UNFCCC, *Glasgow Climate Pact*, Decision 1/CMA.3, ¶ 30 (March 8, 2022), https://unfccc.int/sites/default/files/resource/cma2021_10a01E.pdf.
- ⁴⁰ UNFCCC, *Glasgow Climate Pact*, Decision 1/CP.26, ¶ 20.
- ⁴¹ UNFCCC, *Sharm el-Sheikh Implementation Plan*, Decision 1/CP.27, ¶ 16 (March 17, 2023), https://unfccc.int/sites/default/files/resource/cp2022_10a01_E.pdf.
- ⁴² *Climate Change 2023 Synthesis Report Summary for Policymakers* 20-21 (Geneva, Switzerland: Intergovernmental Panel on Climate Change [hereinafter IPCC], 2023), https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf.
- ⁴³ *Net Zero Roadmap: A Global Pathway to Keep the 1.5 °C Goal in Reach* (Paris, France: IEA, 2023), 75, <https://www.iea.org/reports/net-zero-roadmap-a-global-pathway-to-keep-the-15-0c-goal-in-reach>.
- ⁴⁴ *Net Zero by 2050* (Paris, France: IEA, 2021), <https://www.iea.org/reports/net-zero-by-2050>.
- ⁴⁵ *The Production Gap: Phasing down or phasing up? Top fossil fuel producers plan even more extraction despite climate promises* (Stockholm Environment Institute, Climate Analytics, E3G, International Institute for Sustainable Development and United Nations Environment Programme, 2023), <https://doi.org/10.51414/sei2023.050>.
- ⁴⁶ Raimi et al., *Global Energy Outlook 2024: Peaks or Plateaus?* (Washington, DC: Resources for the Future, April 2024), 3, <https://www.rff.org/publications/reports/global-energy-outlook-2024/>.
- ⁴⁷ Guilanpour et al., *A Solutions-oriented Approach to the Paris Agreement’s Global Stocktake*; Lavanya Rajamani et al., *Re-invigorating the UN Climate Regime in the Wider Landscape of Climate Action* (Arlington, VA: C2ES, November 2023), <https://www.c2es.org/document/re-invigorating-the-un-climate-regime/>.
- ⁴⁸ UNFCCC, *Technical dialogue of the first global stocktake: Synthesis report by the co-facilitators on the technical dialogue*.
- ⁴⁹ According to a recent report by IEA, in 2023 governments spent U.S. \$620 billion to subsidize the use of fossil fuels, particularly in emerging and developing economies. This figure dwarfs the U.S. \$70 billion that was spent in 2023 to support clean energy investments, in the form of grants, rebates for electric vehicles, and initiatives to enable energy efficiency improvements. *Strategies for Affordable and Fair Clean Energy Transitions* (Paris, France: IEA, May 2024), <https://www.iea.org/reports/strategies-for-affordable-and-fair-clean-energy-transitions>.
- ⁵⁰ However, the overall balance is overwhelmingly positive in terms of achieving SDGs and climate action. See *Synergy Solutions for Climate and SDG Action: Bridging the Ambition Gap for the Future We Want Report on Strengthening the Evidence Base* (United Nations, 2024), <https://sdgs.un.org/sites/default/files/2024-07/UN%20Synergy%20Solutions%20for%20Climate%20and%20SDG%20Action-3.pdf>. See also, Måns Nilsson et al., *Seeking Synergy Solutions Policies that Support Both Climate and SDG Action* (Expert Group on Climate and SDG Synergy, 2024), <https://sdgs.un.org/sites/default/files/2024-06/Thematic%20Report%20on%20Climate%20and%20SDGs%20Action-060824.pdf>.
- ⁵¹ Eda Kosma, Kaveh Guilanpour, and Leila Pourarkin, *Rising to the Climate Finance Challenge* (Arlington, VA: C2ES September 2024), <https://www.c2es.org/document/rising-to-the-climate-finance-challenge/>.
- ⁵² Guilanpour et al., *A Solutions-oriented Approach to the Paris Agreement’s Global Stocktake*; HLCs and the Marrakech Partnership for Global Climate Action, *2030 Climate Solutions: Implementation Roadmap*.
- ⁵³ A carbon price applied to emissions of regulated entities represents an added production cost which is often transferred onto consumers through a price increase in final products sold to the market.
- ⁵⁴ The role of the HLCs was established at COP21 to connect the work of governments with the main voluntary and collaborative actions taken by cities, regions, businesses, and investors. The HLCs’ initiatives and analytical work

are offered as valuable resources to Parties in taking climate action. “The High Level Climate Champions,” UNFCCC, accessed September 16, 2024, <https://climatechampions.unfccc.int/un-climate-change-high-level-champions/>.

⁵⁵ HLCs and the Marrakech Partnership for Global Climate Action, *2030 Climate Solutions: Implementation Roadmap*.

⁵⁶ These actions and enablers have been drawn from the HLCs work on the 2030 Breakthroughs, which sets out a Clean Power Breakthrough aiming for solar and wind to make up at least 40 percent – and all renewables to make up at least 60 percent – of global electricity generation by 2030. “2030 Breakthroughs,” UNFCCC, accessed September 16, 2024, <https://climatechampions.unfccc.int/system/breakthroughs/>. They also draw on the Breakthrough Agenda; it aims to make clean power “the most affordable and reliable option for all countries to meet their power needs efficiently by 2030.” “The Breakthrough Agenda,” accessed September 16, 2024, <https://breakthroughagenda.org/>.

⁵⁷ The G20’s Task Force on a Global Mobilization Against Climate Change (TF-CLIMA), Issue Note (2024).

⁵⁸ First published in 2021 and updated in September 2023, the IEA’s Net Zero Roadmaps report demonstrated that ramping up renewables like solar and wind power, improving energy efficiency, cutting methane emissions and increasing electrification would deliver more than 80 percent of the emissions reductions needed by 2030. “The path to limiting global warming to 1.5°C has narrowed, but clean energy growth is keeping it open,” IEA, September 26, 2023, <https://www.iea.org/news/the-path-to-limiting-global-warming-to-1-5-c-has-narrowed-but-clean-energy-growth-is-keeping-it-open>.

⁵⁹ “At IEA Ministerial Meeting and 50th Anniversary, global leaders pledge to strengthen energy security and accelerate clean transitions to keep 1.5°C target alive,” IEA, February 14, 2024, <https://www.iea.org/news/at-iea-ministerial-meeting-and-50th-anniversary-global-leaders-pledge-to-strengthen-energy-security-and-accelerate-clean-transitions-to-keep-1-5-c-target-alive>.

⁶⁰ “At IEA event, COP28 President and other climate and energy leaders identify priority actions to deliver on Dubai outcomes,” IEA, February 20, 2024, <https://www.iea.org/news/at-iea-event-cop28-president-and-other-climate-and-energy-leaders-identify-priority-actions-to-deliver-on-dubai-outcomes>.

⁶¹ “COP28: Tracking the Energy Outcomes,” IEA, accessed September 16, 2024, https://www.iea.org/topics/cop28-tracking-the-energy-outcomes?utm_source=newsletter&utm_medium=email&utm_campaign=newsletter_axiosgenerate&stream=top.

⁶² UNFCCC, Outcome of the first global stocktake, Decision 1/CMA.5, ¶ 28.

⁶³ “Climate, Energy and Environment Ministers’ Meeting Communique,” G7 Italia, April 2024, https://www.g7italy.it/wp-content/uploads/G7-Climate-Energy-Environment-Ministerial-Communique_Final.pdf.

⁶⁴ “IRENA Policy Talks 2024: Tripling Renewable Finance Needs, January 25, 2024,” IRENA, accessed 16 September 2024, <https://www.irena.org/Events/2024/Jan/IRENA-Policy-Talks-2024-Tripling-Renewables-Ambition-progress-and-financing-needs>.

⁶⁵ “IRENA Policy Talks 2024: – Post-COP28: Translating pledges into action in the GCC,” IRENA, February 15, 2024, <https://www.irena.org/Events/2024/Feb/IRENA-Policy-Talks-2024-Post-COP28-Translating-pledges-into-action-in-the-GCC>.

⁶⁶ “Fourteenth Session of the IRENA Assembly, April 16-18, 2024,” IRENA, accessed 16 September 2024, <https://www.irena.org/Events/2024/Apr/Fourteenth-Session-of-the-IRENA-Assembly>.

⁶⁷ “Major Global Utilities Announce Joint Intent to Scale Renewable Capacity by 2.5 times to 2030,” IRENA, April 19, 2024, <https://www.irena.org/News/pressreleases/2024/Apr/Major-Global-Utilities-Announce-Joint-Intent-to-Scale-Renewable-Capacity-by-2-point-5-times-to-2030>.

⁶⁸ Utilities for Net Zero Alliance [hereinafter UNEZA], *Plan of Actions* (UNEZA, April 15, 2024), https://www.irena.org/-/media/UNEZA/Files/UNEZA_Detailed_Action-Plan.pdf.

⁶⁹ “Climate Promise,” UN Development Programme [hereinafter UNDP], accessed September 16, 2024, <https://climatepromise.undp.org>.

⁷⁰ “UN Development Programme launches next phase of flagship climate action initiative” (Press Release), UNDP, April 23, 2024, <https://climatepromise.undp.org/news-and-stories/un-development-programme-launches-next-phase-flagship-climate-action-initiative>.

⁷¹ “About Us,” NDC Partnership, accessed September 16, 2024, <https://ndcpartnership.org/about-us>.

- ⁷² “NDC 3.0 Navigator,” NDC Partnership, accessed September 16, 2024, <https://ndcnavigator.org/>.
- ⁷³ “Aligned to the Paris Agreement Temperature Goal: Exploring Sector-Specific Opportunities,” NDC 3.0 Navigator, NDC Partnership, accessed September 16, 2024, <https://ndcnavigator.org/routes/temperature-goal/sector-specific-opportunities>.
- ⁷⁴ “Regional Fora Aim to Increase Country Ambition Ahead of Next Round of Climate Plans,” UNFCCC, July 23, 2024, <https://unfccc.int/news/regional-fora-aim-to-increase-country-ambition-ahead-of-next-round-of-climate-plans>.
- ⁷⁵ “Action to Decarbonize High Emitting Industrial Sectors Gathers Pace – Key Steps by the Technology Executive Committee,” UNFCCC, May 6, 2024, <https://unfccc.int/news/action-to-decarbonize-high-emitting-industrial-sectors-gathers-pace-key-steps-by-the-technology>.
- ⁷⁶ Katherine Kramer, “Just Energy Transition Partnerships: An opportunity to leapfrog from coal to clean energy,” *International Institute for Sustainable Development*, December 7, 2022, <https://www.iisd.org/articles/insight/just-energy-transition-partnerships>.
- ⁷⁷ “Energy Transition Accelerator Financing Platform (ETAf): An inclusive multi-stakeholder climate finance platform to advance the global energy transition,” ETA Platform, accessed April 22, 2024, <https://etafplatform.org/>.
- ⁷⁸ UNFCCC, *Outcome of the first global stocktake*, Decision 1/CMA.5, ¶ 28(f), (March 15, 2024), <https://unfccc.int/documents/637073>.
- ⁷⁹ Joe Lo and Megan Rowling, “IEA calls for next national climate plans to target coal phase-down,” *Climate Home News*, June 25, 2024, <https://www.climatechangenews.com/2024/06/25/iea-calls-for-next-national-climate-plans-to-target-coal-phase-down>.
- ⁸⁰ Joel Jaeger, “These 10 Countries Are Phasing Out Coal the Fastest,” World Resources Institute (November 30, 2023), <https://www.wri.org/insights/countries-phasing-out-coal-power-fastest>.
- ⁸¹ Francesco Tassi and Noah Kittner, “Repurposing coal plants—regional economic impacts from low carbon generation,” in *Renewable and Sustainable Energy Reviews*, Vol. 199 (Chapel Hill, NC: July 2024), <https://doi.org/10.1016/j.rser.2024.114467>; See also, “Engie to build first standalone BESS in Chile at decommissioned coal plant,” April 11, 2024, Energy Storage News, <https://www.energy-storage.news/engie-to-build-first-standalone-bess-in-chile-at-decommissioned-coal-plant/>.
- ⁸² See, e.g., Kaveh Guilanpour et al., *What are Investable NDCs?* (Arlington, VA: C2ES, July 2024), <https://www.c2es.org/document/what-are-investable-ndcs-discussion-paper/>.
- ⁸³ “Net Zero Roadmap: A Global Pathway to Keep the 1.5 °C Goal in Reach: Executive summary,” IEA, accessed September 16, 2024.
- ⁸⁴ Reducing methane emissions from oil and natural gas operations by 75 percent costs around U.S. \$75 billion in cumulative spending to 2030, equivalent to just 2 percent of the net income received by the oil and gas industry in 2022. “Net Zero Roadmap: A Global Pathway to Keep the 1.5 °C Goal in Reach: Executive summary,” IEA, accessed 16 September, 2024, <https://www.iea.org/reports/net-zero-roadmap-a-global-pathway-to-keep-the-15-0c-goal-in-reach/executive-summary>.
- ⁸⁵ “Net Zero Roadmap: A Global Pathway to Keep the 1.5 °C Goal in Reach: Executive summary,” IEA, accessed September 16, 2024.
- ⁸⁶ “Net Zero Roadmap: A Global Pathway to Keep the 1.5 °C Goal in Reach: Executive summary,” IEA, accessed September 16, 2024.
- ⁸⁷ “Net Zero Roadmap: A Global Pathway to Keep the 1.5 °C Goal in Reach: Executive summary,” IEA, accessed September 16, 2024.
- ⁸⁸ The Global Methane Pledge is an initiative launched in 2021, to reduce global methane emissions and keep the goal of limiting warming to 1.5 degrees Celsius within reach. The United States, European Union and over 110 countries have signed the pledge, which represents more than 70% of the global economy and half of anthropogenic methane emissions; “About,” Global Methane Pledge, accessed September 24, 2024, <https://www.globalmethanepledge.org/>.
- ⁸⁹ COP28, Oil and Gas Decarbonization Charter, (Dubai, UAE, COP28, 2023), <https://www.tralac.org/documents/resources/external-relations/united-nations/5138-cop28-oil-and-gas-decarbonization-charter/file.html>.

- ⁹⁰ “The Oil & Gas Methane Partnership 2.0 (OGMP 2.0),” UN Environment Programme, accessed August 26, 2024, https://www.unep.org/topics/energy/methane/international-methane-emissions-observatory/methane-alert-and-response-0?gad_source=1&gclid=Cj0KCQjw28W2BhC7ARIsAPerrclx5smk7h4BvG4nXkrU7OUueG73p0SovzNVnzzp1tufjaXPvOFcBsaAskAEALw_wcB
- ⁹¹ “Reducing emissions linked to Oil&Gas production, contributing to the Net Zero target,” *Eni*, accessed September 24, 2024, <https://www.eni.com/en-IT/sustainability/decarbonization/oil-gas.html>.
- ⁹² “First Dialogue on Just Transition Tackles Challenges, Seeks International Cooperation,” UNFCCC, June 7 2024, <https://unfccc.int/news/first-dialogue-on-just-transition-tackles-challenges-seeks-international-cooperation>
- ⁹³ “Chile: Incorporating a Just Transition into Chile’s Nationally Determined Contribution,” *World Resources Institute*, April 1, 2021, <https://www.wri.org/update/chile-incorporating-just-transition-chiles-nationally-determined-contribution>.
- ⁹⁴ “Progress in the Retirement of Coal Facilities in Chile and the Definition of a Just Energy Transition Strategy,” *Powering Past Coal Alliance*, May 29, 2024, <https://poweringpastcoal.org/case-studies/progress-in-the-retirement-of-coal-facilities-in-chile-and-the-definition-of-a-just-energy-transition-strategy/>.
- ⁹⁵ SDG Actions Platform, UNSG, accessed October 7, 2024, <https://sdgs.un.org/partnerships>.
- ⁹⁶ UNFCCC, *Glasgow Climate Pact*, Decision 1/CMA.3, ¶ 30.
- ⁹⁷ “Building Support for More Ambitious Climate Actions,” UNFCCC, March 14, 2024, <https://unfccc.int/news/building-support-for-more-ambitious-national-climate-action-plans>.
- ⁹⁸ “Coal 2023,” IEA, accessed August 20, 2024, <https://www.iea.org/reports/coal-2023>.
- ⁹⁹ “Greenhouse Gas Emissions From Energy Data Explorer,” IEA, accessed August 21, 2024, <https://www.iea.org/data-and-statistics/data-tools/greenhouse-gas-emissions-from-energy-data-explorer>.
- ¹⁰⁰ *Accelerating Just Transitions for the Coal Sector* (Paris, France: IEA, March 2024), 17, <https://www.iea.org/reports/accelerating-just-transitions-for-the-coal-sector>.
- ¹⁰¹ *Net Zero Roadmap A Global Pathway to Keep the 1.5 °C Goal in Reach 2023 Update* (Paris, France: IEA, 2023), 16, <https://www.iea.org/reports/net-zero-roadmap-a-global-pathway-to-keep-the-15-0c-goal-in-reach>.
- ¹⁰² *Electricity Mid-Year Update* (Paris, France: IEA, July 2024), https://iea.blob.core.windows.net/assets/234d0d22-6f5b-4dc4-9f08-2485f0c5ec24/ElectricityMid-YearUpdate_July2024.pdf.
- ¹⁰³ Guilanpour et al., *A Solutions-oriented Approach to the Paris Agreement’s Global*; Lavanya Rajamani et al., *Re-invigorating the UN Climate Regime in the Wider Landscape of Climate Action*.
- ¹⁰⁴ UNFCCC, *Technical dialogue of the first global stocktake: Synthesis report by the co-facilitators on the technical dialogue*.
- ¹⁰⁵ Guilanpour et al., *A Solutions-oriented Approach to the Paris Agreement’s Global*; Lavanya Rajamani et al., *Re-invigorating the UN Climate Regime in the Wider Landscape of Climate Action*.
- ¹⁰⁶ Guilanpour et al., *A Solutions-oriented Approach to the Paris Agreement’s Global*; Lavanya Rajamani et al., *Re-invigorating the UN Climate Regime in the Wider Landscape of Climate Action*.
- ¹⁰⁷ Guilanpour et al., *A Solutions-oriented Approach to the Paris Agreement’s Global*; Lavanya Rajamani et al., *Re-invigorating the UN Climate Regime in the Wider Landscape of Climate Action*.
- ¹⁰⁸ Guilanpour et al., *A Solutions-oriented Approach to the Paris Agreement’s Global Stocktake*; HLCs and the Marrakech Partnership for Global Climate Action, *2030 Climate Solutions: Implementation Roadmap*.
- ¹⁰⁹ IEA, *Net Zero Roadmap A Global Pathway to Keep the 1.5 °C Goal in Reach 2023 Update* (Paris, France: IEA, 2023), 16.
- ¹¹⁰ IEA, *Gas Market Report Q2 – 2021* (Paris, France: IEA, 2021), 32, <https://www.iea.org/reports/gas-market-report-q2-2021>.
- ¹¹¹ *The Oil and Gas Industry in Net Zero Transitions, World Energy Outlook Special Report* (Paris: France: IEA, 2024 update), 26, <https://iea.blob.core.windows.net/assets/f065ae5e-94ed-4fcb-8f17-8ceffde8bdd2/TheOilandGasIndustryinNetZeroTransitions.pdf>.
- ¹¹² IEA, *Oil 2024* (Paris: France, IEA, December 2024), 11, <https://www.iea.org/reports/oil-2024>.

- ¹¹³ *The Oil and Gas Industry in Net Zero Transitions*, *World Energy Outlook Special Report* (Paris, France: IEA, 2024 update), 26, <https://iea.blob.core.windows.net/assets/f065ae5e-94ed-4fcb-8f17-8ceffde8bdd2/TheOilandGasIndustryinNetZeroTransitions.pdf>.
- ¹¹⁴ IEA, *The Oil and Gas Industry in Net Zero Transitions*, *World Energy Outlook Special Report*, 26.
- ¹¹⁵ IEA, *Net Zero Roadmap A Global Pathway to Keep the 1.5 °C Goal in Reach 2023 Update*, 55.
- ¹¹⁶ IEA, *Net Zero Roadmap A Global Pathway to Keep the 1.5 °C Goal in Reach 2023 Update*, 16.
- ¹¹⁷ IEA, *Net Zero Roadmap A Global Pathway to Keep the 1.5 °C Goal in Reach 2023 Update*, 16.
- ¹¹⁸ Guilanpour et al., *A Solutions-oriented Approach to the Paris Agreement’s Global*; Lavanya Rajamani et al., *Re-invigorating the UN Climate Regime in the Wider Landscape of Climate Action*.
- ¹¹⁹ Guilanpour et al., *A Solutions-oriented Approach to the Paris Agreement’s Global*; Lavanya Rajamani et al., *Re-invigorating the UN Climate Regime in the Wider Landscape of Climate Action*, 7.
- ¹²⁰ “IEA to convene major international energy security summit in London, hosted by UK government,” IEA, August 2, 2024, <https://www.iea.org/news/iea-to-convene-major-international-energy-security-summit-in-london-hosted-by-uk-government>.
- ¹²¹ Guilanpour et al., *A Solutions-oriented Approach to the Paris Agreement’s Global Stocktake*; HLCs and the Marrakech Partnership for Global Climate Action, *2030 Climate Solutions: Implementation Roadmap*.
- ¹²² See also, C2ES, *Enhancing Action & Cooperation for the Tripling of Renewable Energy Capacity Globally* (Arlington, VA: September 2024), <https://www.c2es.org/document/enhancing-action-international-cooperation-for-the-tripling-of-renewable-energy-capacity-globally-by-2030/>; C2ES, *Enhancing Action & Cooperation for the Doubling of Energy Efficiency* (Arlington, VA: September 2024), <https://www.c2es.org/document/enhancing-action-international-cooperation-for-the-doubling-of-energy-efficiency-by-2030/>.
- ¹²³ Guilanpour et al., *A Solutions-oriented Approach to the Paris Agreement’s Global Stocktake*; HLCs and the Marrakech Partnership for Global Climate Action, *2030 Climate Solutions: Implementation Roadmap*.
- ¹²⁴ HLCs and the Marrakech Partnership for Global Climate Action, *2030 Climate Solutions: Implementation Roadmap*.
- ¹²⁵ HLCs and the Marrakech Partnership for Global Climate Action, *2030 Climate Solutions: Implementation Roadmap*.
- ¹²⁶ IEA, *Empowering Urban Energy Transitions – Smart cities and smart grids* (Paris: France, IEA, May 2024), <https://www.iea.org/reports/empowering-urban-energy-transitions>.
- ¹²⁷ “Industry,” IEA, accessed August 5, 2024, <https://www.iea.org/energy-system/industry>.
- ¹²⁸ IEA, *Innovation Gaps*, (Paris, France: IEA, May 2019) <https://www.iea.org/reports/innovation-gaps>.
- ¹²⁴ UNFCCC, *Outcome of the first global stocktake*, Decision 1/CMA.5, ¶ 28(d).
- ¹³⁰ World Economic Forum, *Transforming Energy Demand: White Paper* (Geneva, Switzerland: World Economic Forum, January 2024), https://www3.weforum.org/docs/WEF_Transforming_Energy_Demand_2024.pdf.
- ¹³¹ “What is just transition, and why is it important?” UNDP Climate Promise, November 3, 2022, <https://climatepromise.undp.org/news-and-stories/what-just-transition-and-why-it-important>.
- ¹³² World Economic Forum, *Fostering Effective Energy Transition 2024* (Geneva, Switzerland, World Economic Forum, June 19, 2024), <https://www.weforum.org/publications/fostering-effective-energy-transition-2024/>.
- ¹³³ “About PAGE.” UN Partnership for Action on Green Economy [hereinafter UN PAGE], accessed August 26, 2024, <https://www.un-page.org/>.
- ¹³⁴ ILO, *Guidelines for a Just Transition Towards Environmentally Sustainable Economies and Societies for All* (2015) <https://www.ilo.org/publications/guidelines-just-transition-towards-environmentally-sustainable-economies>.
- ¹³⁵ “Climate Action 4 Jobs,” *International Labour Organization*, accessed August 26, 2024, <https://www.climateaction4jobs.org/>.
- ¹³⁶ “Just & Inclusive Energy Transition: Collaborative Framework on Just & Inclusive Energy Transition,” IRENA, accessed August 26, 2024, <https://www.irena.org/How-we-work/Collaborative-frameworks/Just-and-Inclusive-Energy-Transition>; “IRENA Members Welcome New Framework on Just and Inclusive Energy Transition,” IRENA, May 30, 2021, <https://www.irena.org/news/articles/2021/May/IRENA-Members-Welcome-New-Framework-on-Just-and-Inclusive-Energy-Transition>.

¹³⁷ OECD, “Equitable Framework and Finance for Extractive-based Countries in Transition (EFFECT),” (Paris, France: OECD, September 15, 2022), <https://doi.org/10.1787/7871c0ad-en>.

¹³⁸ “Global Summit on People-Centred Clean Energy Transition,” IEA, April 26, 2024,

<https://www.iea.org/events/global-summit-on-people-centred-clean-energy-transitions>.

¹³⁹ “Designing for Fairness,” IEA, accessed September 16, 2024, <https://www.iea.org/programmes/designing-for-fairness>; for more information, see <https://www.iea.org/programmes/people-centred-clean-energy-transitions>.

¹⁴⁰ IEA, *Strategies for Affordable and Fair Clean Energy Transitions* (Paris, France: IEA, May 2024).

¹⁴¹ “About,” Global Methane Hub, accessed September 16, 2024.

¹⁴² “About,” Powering Past Coal Alliance, accessed September 16, 2024, <https://poweringpastcoal.org/>.

¹⁴³ Sustainable Energy for All (SE4ALL) works in partnership with the United Nations to drive the achievement of Sustainable Development Goal (SDG) 7 (expanding access to energy, increasing the share of renewable energy in the global energy mix, and doubling the rate of improvement in energy efficiency).

¹⁴⁴ “The Breakthrough Agenda,” accessed September 16, 2024, <https://breakthroughagenda.org/>.

¹⁴⁵ HLCs and the Marrakech Partnership for Global Climate Action, *2030 Climate Solutions: Implementation Roadmap*.