

Connecting the dots

Mapping references to fossil fuel production in national plans under the UNFCCC for the 2023 Global Stocktake

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Key policy insights

- The 2023 Global Stocktake process provides an opportunity to assess progress on climate action, or lack thereof, across many dimensions of climate policy. This includes the extent to which countries align their fossil fuel production with international climate goals in their Nationally Determined Contributions (NDCs) and Long-term Low-emissions Development Strategies (LT-LEDS).
 - Governments have not harnessed the full potential of NDCs and LT-LEDS to detail plans and targets to transition away from fossil fuels. Although many fossil-fuel-producing countries mention fossil fuel production in their NDCs and LT-LEDS, most often this includes continued or increased production. However, some countries have set targets or policies to wind down fossil fuel production.
 - Countries can strengthen fossil-fuel-production-related information in NDCs and LT-LEDS, particularly in their plans to diversify their economies, ensure a just transition for workers, and cooperate internationally on a managed, equitable transition away from fossil fuel production.
 - Policy-makers can harvest lessons from existing NDCs and LT-LEDS when revising future NDCs and LT-LEDS to ensure better coherence between climate goals and fossil fuel production plans.
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Summary

Fossil fuel production must wind down significantly to achieve the long-term temperature goals of the Paris Agreement. How countries have addressed the issue of fossil fuel production in national communications to the UN Framework Convention on Climate Change (UNFCCC), however, has not received extensive attention from the climate community.

This report remedies this gap by reviewing nationally determined contributions (NDCs) and long-term low-emissions development strategies (LT-LEDS) countries submitted under the UNFCCC. We show that while more countries have explicitly addressed fossil fuel production in NDCs over time, this has mostly related to continued or expanded production, with little mention of efforts to prepare for a transition away from fossil fuel reliance. Only a small number of countries have used NDCs and LT-LEDS as a space to plan for and communicate policies to support a managed transition away from fossil fuel production.

This report contributes to the 2023 Global Stocktake by providing an inventory of how fossil fuel production has been discussed in NDCs and LT-LEDS to date, and by establishing a benchmark by which to assess further rounds of international climate plans and commitments. This also provides a useful tool for policy-makers when developing future NDCs and LT-LEDS.

Abbreviations

BOGA	Beyond Oil & Gas Alliance
COP	Conference of the Parties
GST	Global Stocktake
IEA	International Energy Agency
INDC(s)	Intended nationally determined contribution(s)
LT-LEDS	Long-term low-emissions development strategy/ies
NDC(s)	Nationally determined contribution(s)
SEI	Stockholm Environment Institute
UNFCCC	UN Framework Convention on Climate Change

1. Introduction

The United Nations climate change process has historically avoided paying explicit attention to fossil fuel production, in part due to deliberate strategies employed by large fossil-fuel-producing states to keep this topic off the international climate agenda (Depledge, 2008; Chan, 2016; Aykut & Castro, 2017). Nevertheless, there is increasing consensus that meeting Paris Agreement temperature targets while avoiding an unnecessarily abrupt and disruptive transition away from fossil fuels requires governments to plan for a managed decline in fossil fuel production (IEA, 2021; SEI et al., 2021).

In a step forward, the Glasgow Climate Pact agreed at the 26th UN Climate Change Conference (COP26) underscored the need to accelerate “efforts towards the phase-out of unabated coal power and inefficient fossil fuel subsidies” (UNFCCC, 2021). This statement was reiterated at COP27 in Sharm El-Sheikh (UNFCCC, 2022).

Meanwhile, a small group of states and subnational actors have pushed for a new approach to fossil fuel production. At COP26, several national and subnational governments launched the Beyond Oil and Gas Alliance, which seeks to promote a managed phase-out of oil and gas production to align with Paris Agreement goals (BOGA, 2021) and has 11 core members as of COP27. In addition, 39 countries and financing institutions pledged to phase out international finance for all coal, oil and gas by 2022 (UN Climate Change Conference UK 2021, 2021), with many of them implementing their commitment by the deadline, and others also joining the pledge at COP27 (McGibbon, 2023). Several countries announced a US\$8.5 billion partnership with South Africa to manage a just transition away from coal (South Africa et al., 2021), and similar partnerships were announced with Indonesia and Viet Nam (Foreign, Commonwealth & Development Office, 2022; Indonesia et al., 2022).

This increased political focus on fossil fuel transitions is important and promising, given the need to align fossil fuel production with climate goals. But to what extent are countries translating this into commitments under the UN climate process? With the first Global Stocktake (GST) under the Paris Agreement culminating in December 2023 (see box), this report takes stock of what countries currently say about fossil fuel production in their Nationally Determined Contributions (NDCs) and Long-term Low-emission Development Strategies (LT-LEDS) under the UN Framework Convention on Climate Change (UNFCCC) process.

NDCs and LT-LEDS are key documents through which governments can communicate their climate change plans within the UNFCCC process, allowing states to signal their climate action intentions and priorities internationally. NDCs, required under the Paris Agreement, are communicated on a 5–10-year cycle, while LT-LEDS, which are voluntary, are submitted with a mid-century horizon. LT-LEDS are intended to inform short- and medium-term action and planning, provide political certainty and enable countries to make economic transformations while also meeting development and poverty eradication goals (Espinosa, 2018). Both documents may inform the GST (UNFCCC, 2018), and are critical to enhancing transparency on national ambitions and, when considered collectively, international progress in meeting Paris Agreement goals (SEI et al., 2021).

Though countries are not required to report on their commitments relating to fossil fuel production in these plans, they can voluntarily include commitments on this front. By doing so, countries could help normalize policies to limit or wind down fossil fuel production internationally. To date, our analyses revealed that governments have not yet sufficiently used the potential of NDCs and LT-LEDS to communicate plans and targets supporting a transition away from fossil fuels (Piggott et al., 2018; Verkuil et al., 2019; Jones et al., 2021). Nevertheless, Article 3 of the Paris Agreement emphasizes the importance of continuous progress (UNFCCC, 2015b). Therefore, the GST process can monitor progress towards increasingly ambitious targets for fossil fuel wind-down (Piggott et al., 2018; Verkuil et al., 2019; Jones et al., 2021).

BOX: WHAT IS THE GLOBAL STOCKTAKE?

The Global Stocktake (GST) is a process established by the 2015 Paris Agreement to assess collective progress towards achieving its goals (UNFCCC, 2015b). It involves a comprehensive review of current global efforts to address climate change and the effectiveness of countries' actions to mitigate greenhouse gas emissions and adapt to climate change's impacts.

The GST is important for climate action because it provides a regular opportunity for countries to review their progress towards meeting their climate commitments and to identify where more action is needed. It helps ensure that countries are held accountable for their climate actions and that they work towards the same goals. The GST also helps identify gaps in knowledge and capacity that must be addressed to improve global efforts to tackle climate change.

The GST is scheduled to take place every five years, with the first Stocktake ending in 2023 after a two-year process. Insights and lessons from this process should inform the next round of NDCs, which is expected in 2025, and can also inform the revision of countries' LT-LEDS.

Through analysis of all NDCs and LT-LEDS submitted by 15 March 2023, this report examines how countries approach fossil fuel production in their NDCs and LT-LEDS, with a view to informing the GST. Based on these findings, it also offers recommendations for strengthening these documents in future submission rounds. To the extent that the insufficient use of NDCs and LT-LEDS to communicate fossil fuel phase-down plans is due to a lack of knowledge on the part of countries about how they may be so used, this report aims to address this gap. In doing so, we identify a framework to assess efforts described in climate plans to wind down fossil fuel production that can track progress in this area. We also highlight notable differences in how the first and second waves of NDCs approach fossil fuel production.

Section 2 of this report describes the sample and method used to examine countries' climate plans for language relevant to fossil fuel production. We identify best practices of what to include in these communications to support a just and equitable wind-down in fossil fuel production. Section 3 discusses our results, highlighting that, while countries increasingly communicate matters relating to fossil fuel production in their NDCs, this most often entails a continuation of or increase in production, rather than a just and equitable wind-down. Section 4 discusses the significance of our findings and Section 5 concludes with policy recommendations for governments to more fully integrate a shift away from fossil fuel production in the next round of climate change communications.

2. Method and classification

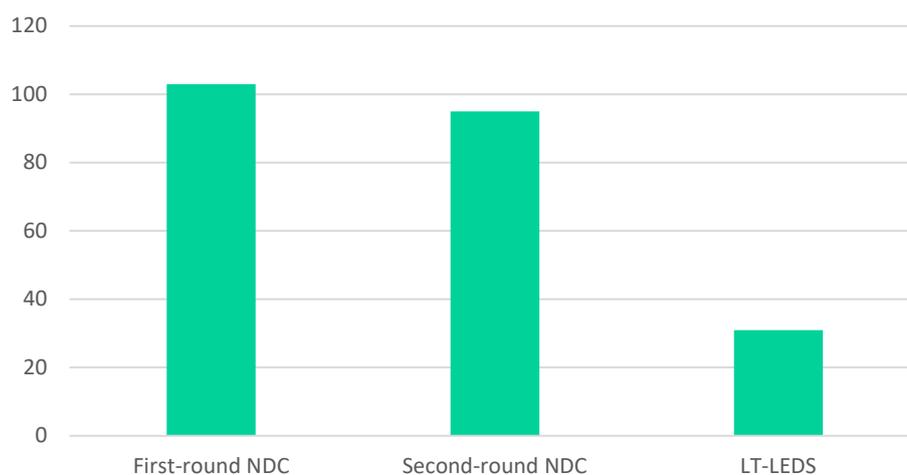
We analysed all NDCs and LT-LEDS that countries had communicated to the UNFCCC by 15 March 2023. NDCs and LT-LEDS were sourced, respectively, from the UNFCCC interim NDC Registry (UNFCCC, n.d.-b) and the UNFCCC webpage (UNFCCC, n.d.-a). NDCs submitted in languages other than English were translated using Google Translate. We read documents submitted by countries that produce coal, oil and/or gas, as well as those that do not, both for completeness and because some countries that do not currently produce fossil fuels have the potential to become significant producers in future. We sourced data on fossil fuel production from the *2021 BP Statistical Review of World Energy* (BP, 2021) and The Shift Dataportal (The Shift Project, n.d.). We sourced national extraction-based carbon dioxide emissions from the top-down estimate of the *Production Gap Report* (SEI et al., 2019, Appendix B, Table B4).

We divided the NDCs into two rounds. The first round consists of countries' first NDCs, communicated pursuant to paragraph 22 of decision 1/CP.21 (UNFCCC, 2015a), between 2015 and early 2019.¹ The second-round NDCs are countries' new or updated NDCs, communicated pursuant to paragraphs 23 and 24 of decision 1/CP.21 and Article 4.9 of the Paris Agreement (UNFCCC, 2015b) up until 12 November 2021, the end date of COP27.

Some of the second-round NDCs are first NDCs (where the country had not previously submitted an NDC); some are updated or re-communicated first NDCs (where the relevant country's first NDC had contained a time frame up to 2030, under paragraph 24); and others are second NDCs (where the country's first NDC had contained a time frame up to 2025, under paragraph 23). In the rest of this report, we refer to all these as "second-round NDCs".² Where a country submitted more than one update during 2020 and 2021, we selected the most recent.

In total, we examined 103 first-round NDCs, 95 second-round NDCs and 31 LT-LEDS belonging to fossil-fuel-producing countries (Figure 1).³ For completeness, we also considered 65 first-round NDCs, 48 second-round NDCs and 19 LT-LEDS submitted by countries that do not produce fossil fuels, in case countries that have reserves but not yet begun fossil fuel production mentioned production in their documents.

Figure 1. Total number of NDCs and LT-LEDS considered



¹ We analysed documents communicated by all fossil-fuel-producing countries except Libya, which has not submitted any NDCs, intended Nationally Determined Contributions (INDCs) or LT-LEDS. Iran and Yemen did not submit a first NDC by 1 April 2019, so we used their respective INDCs. In the rest of this report, we refer to these NDCs and INDCs as "first-round NDCs." Documents submitted by the European Union, which encompasses some fossil-fuel-producing countries, were also included.

² Twenty-two fossil-fuel-producing countries that submitted a first-round NDC had not submitted a second-round NDC by the cut-off date, including several major fossil fuel producers such as India, Iran and Kazakhstan.

³ Where a country submitted more than one LT-LEDS, we analysed the most recent.

We read all documents in full and identified references to fossil fuel production. We do not include references to fossil fuel consumption. To ensure we did not miss any relevant text, we also searched each document using the following terms: “coal”, “economic diversification”, “extract”, “fossil”, “fuel”, “gas”, “hydrocarbon”, “just transition”, “lignite”, “mine/mining”, “oil”, “petrol(eum)”, “producer”, “production”, “subsidy/ies” and “supply”.

Building on previous work (Verkuijl et al., 2019; Jones et al., 2021), we identified five broad categories and eleven subcategories of fossil fuel production references, and coded the data accordingly.⁴ The five categories are: (1) background information; (2) winding down or phasing out production; (3) continuing or increasing production; (4) transition planning; and (5) equity and international support and cooperation. These categories are summarized in Table 1.

This report’s analysis does not include references to fossil fuel production that were included in an incidental manner, such as defining the coverage of the NDC to include emissions from the fossil fuel production sector (e.g. Zambia, 2020), coverage of the country’s GHG emissions inventory (e.g. Chad, 2021), and establishing baseline levels of emissions from the energy sector (e.g. Bangladesh, 2021).

Table 1. Information related to fossil fuel production that could be included in NDCs and LT-LEDS

Category	Description	Relevance
1. Background information	Information on countries’ fossil fuel reserves, current production, future production plans and projections, support to fossil fuel production and carbon content of fossil fuel production.	Baseline information on countries’ fossil fuel resources and their production plans is necessary to understand the scale of the challenge in transitioning away from fossil fuels and to assess the extent to which current production and production plans align with climate goals.
2. Winding down or phasing out production	References to reducing, winding down or phasing out fossil fuel production. Includes subcategories of: (a) pathways and targets to wind down production and (b) policies and measures to disincentivize or constrain production.	This information is critical to assess progress towards climate goals and to identify opportunities for support and cooperation.
3. Continuing or increasing production	References to maintaining or increasing fossil fuel production, including subcategories of: (a) explicit policies and plans for continued or increased production, (b) references to mitigation measures in the fossil fuel production sector and (c) references to adaptation measures in the fossil fuel production sector.	This information can help highlight potential challenges and barriers to transitioning away from fossil fuels.
4. Transition planning	References related to planning for, or recognizing the need for, an energy transition towards a decarbonized future. Includes subcategories of: (a) economic diversification, (b) response measures and (c) just transition.	This information can highlight a country’s intent to pursue a just transition or economic diversification away from fossil fuel production.
5. Equity and international support and cooperation	References to equity and to international support and cooperation on aligning fossil fuel production with the Paris Agreement. Includes subcategories of: (a) equity and (b) international support and cooperation.	This information demonstrates that countries have considered equity in the context of winding down fossil fuel production.

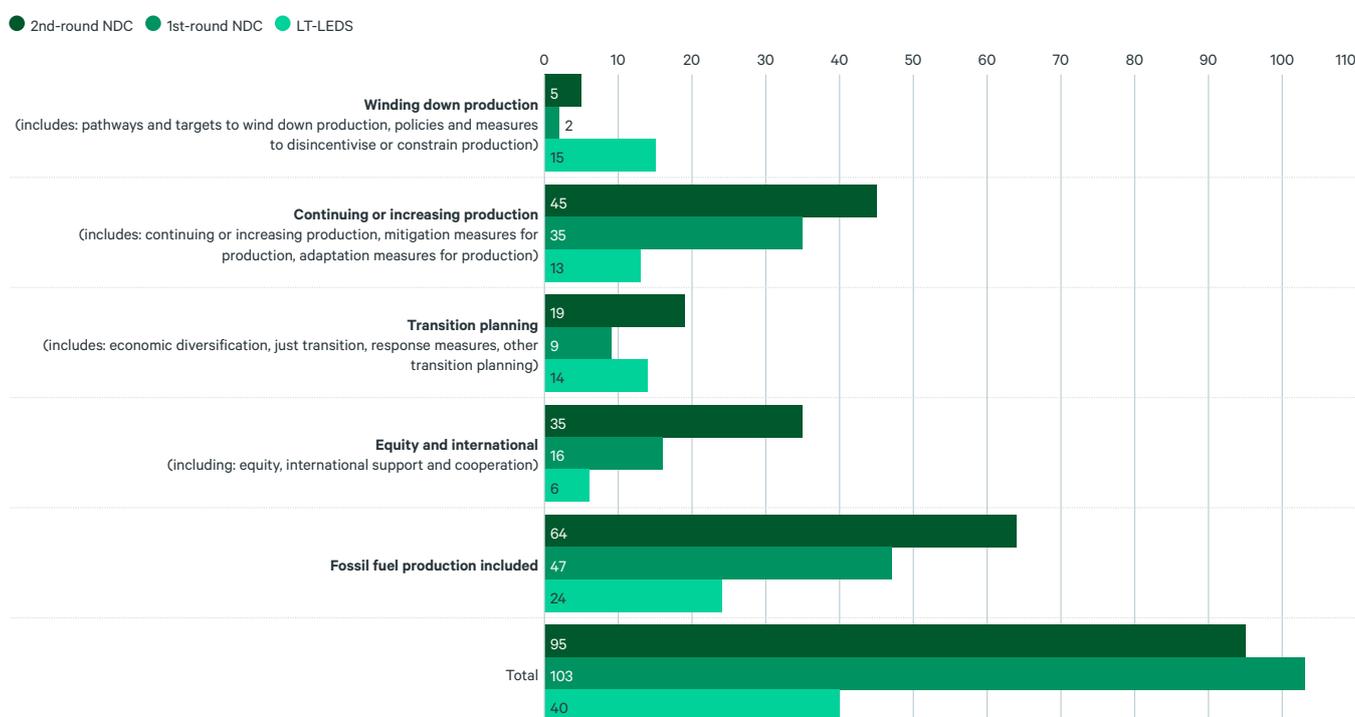
⁴ The full dataset can be found at Jones et al., 2022.

3. Results

Overall, we found that almost half of countries that produce fossil fuels mention their production in their first-round NDCs, 67% mention it in their second-round NDCs and nearly 75% mention it in their LT-LEDS. Nevertheless, the vast majority of fossil-fuel-producing countries have included only limited information about fossil fuel production in their NDCs (Figure 2).

A full one-third of countries do not mention fossil fuel production in their second-round NDCs at all. This includes key fossil fuel producers such as Brazil and Russia, as well as smaller producers such as Kyrgyzstan, Myanmar, New Zealand and Thailand.

Figure 2. The number of documents from fossil-fuel-producing countries that mention any of the five broad categories of fossil fuel production against total first- and second-round NDCs and LT-LEDS



Moreover, compared to the first round of NDCs, an increasing number of countries are signalling, implicitly or explicitly, a continuation or even an increase in fossil fuel production in their NDCs, rather than winding it down, including through plans to make existing production cleaner. This includes some of the world’s largest fossil-fuel-producing countries: Canada, China, Kuwait, Saudi Arabia, the United Arab Emirates and the US. Figure 3 provides a geographical overview of countries’ references to fossil fuel production and whether their references refer to either phasing it out or to maintaining or increasing it, set against their extraction-based emissions.⁵ Some countries mention both, which is not necessarily a contradiction. For example, Australia’s LT-LEDS says that “Australian fossil fuels production is projected to fall over the period to 2050,” but at the same time that “Australia’s coal and gas export industries will continue through to 2050 and beyond” (Australia, 2021).

5 Extraction-based emissions as calculated in SEI et al. (2019)

Conversely, some countries are moving towards aligning fossil fuel production plans with climate goals. Two countries (India and Nigeria) mention targets or policies to restrict or wind down fossil fuel production in first-round NDCs, and three countries (Costa Rica, North Macedonia and Pakistan) plus the European Union do so in second-round NDCs.

When it comes to countries' LT-LEDS, nearly half of fossil-fuel-producing countries mention fossil fuels in the context of transition planning, suggesting that policy-makers might be approaching transition with a more medium-term timeline in mind. Nevertheless, nearly one-third of fossil-fuel-producing countries do not mention transition of the fossil fuel sector even in their medium-term plans.

3.1 Background information

Of the 103 first-round NDCs of fossil-fuel-producing countries, six included information on countries' fossil fuel reserves and current or projected extraction levels, as did 22 of the 95 second-round NDCs and 13 of 31 LT-LEDS (plus Lebanon, which is not a fossil-fuel-producing country).

The level of detail of the background information varies from, for example, listing annual oil production in barrels per day (Colombia, 2020), or the percentage of world oil production for which the country is responsible (Mexico, 2020), to a statement that the country is "rich in coal" (China, 2021). Some countries also describe how production has changed over time and the factors that led to such changes (Angola, 2021) (see Table 2 for additional examples).

Table 2. Examples of background information included in countries' NDCs and LT-LEDS

Type of information	Examples	Document	Contents
Information on fossil fuel production, reserves and support	Colombia 	Second-round NDC	Oil production in barrels per day
	Indonesia 	LT-LEDS	Approximate volumes of oil, gas and coal reserves

3.2 Phasing down fossil fuel production

A relatively small number of NDCs and LT-LEDS include information on restricting or phasing down fossil fuel production. Two countries make such references in first-round NDCs, five in second-round NDCs and 12 countries plus the EU in LT-LEDS.⁶ Some of these reference policies and measures to restrict fossil fuel production (rather than mentioning the actual restriction in the document): the two first-round NDCs (India and Nigeria), three second-round NDCs (Costa Rica, North Macedonia and Pakistan) and six LT-LEDS (Colombia, Denmark, France, New Zealand, Slovakia and South Africa). These comprise a wide range of approaches, including limiting and cancelling oil and gas exploration and exploitation, taxation and subsidy reform, and coal production caps and mine closures (Table 3).

⁶ The 12 countries that, together with the EU, mention restricting or phasing down fossil fuel production in LT-LEDS are Australia, Colombia, Denmark, France, Hungary, New Zealand, North Macedonia, Slovakia, Slovenia, South Africa, the UK and Ukraine.

Table 3. Examples of references to restricting or phasing down fossil fuel production in countries' NDCs and LT-LEDS

Type of information	Examples	Document	Contents
Targets and pathways to wind down fossil fuel production <ul style="list-style-type: none"> • Commitment to reduce or phase out fossil fuel production by a target date • Interim targets for reducing fossil fuel production, including by fuel • Scenarios, modelling and projections for phasing out fossil fuel production (LT-LEDS) 	France 	LT-LEDS	Commitment to phase out fossil fuel extraction by 2040
	North Macedonia 	Second-round NDC	Assumption that lignite production will be capped at an annual maximum level
	European Union 	LT-LEDS	Baseline scenario assumes that most coal mining will be halted by 2050 and includes various scenarios for fossil fuel production
	Indonesia 	LT-LEDS	Various scenarios for coal production to 2050, including coal phase-out
Measures and policies to disincentivize or constrain fossil fuel production <ul style="list-style-type: none"> • Moratorium on oil and gas exploration • Cancellation of exploration and exploitation licensing rounds • Non-renewal or revocation of exploitation permits • Commitment to phase out subsidies for fossil fuel production • Climate tax on fossil fuel extraction 	Costa Rica 	Second-round NDC	Moratorium on exploration and exploitation of fossil fuels
	New Zealand 	LT-LEDS	End of permits for offshore oil and gas exploration
	Denmark 	LT-LEDS	Cancellation of ongoing licensing round and all future rounds to extract oil and gas
	France 	LT-LEDS	Non-renewal of fossil fuel exploitation permits and the phase-out of existing concessions on French territory beyond 2040
	Slovakia 	LT-LEDS	Closure of coal mines

Other countries' documents contain pathways, projections or targets for reducing fossil fuel production: two second-round NDCs (the EU and South Sudan) and 11 LT-LEDS.⁷

Several countries' plans include target dates for a production phase-out of some or all fossil fuels, such as 2040 (e.g. France) or 2050 (e.g. Denmark). The EU's LT-LEDS includes various scenarios for the production of oil, coal and gas, including "the halting of most oil extraction" in the EU by 2050 (EU, 2018, pp. 168–169). Other countries include a projection for a decline in fossil fuel production without making it a target. For instance, Australia's LT-LEDS predicts that its fossil fuel production will be 35% lower in 2050 than in 2020, due to changes in global demand rather than active government policy (Australia, 2021).

Others include less quantitative detail. The EU's second-round NDC says only that "EU fossil fuel production and consumption will continue to decrease", while Slovakia's LT-LEDS says that natural gas production will decline more slowly than oil production, projected to end in 2020 (EU, 2020, p. 5; Slovakia, 2020). South Sudan's second-round NDC predicts that oil extraction will fall in the coming decades (South Sudan, 2021). None of these countries directly link these target dates with the Paris Agreement or explain how their contribution aligns with the 1.5°C goal.

⁷ Australia, Denmark, the EU, France, Hungary, New Zealand, North Macedonia, Slovakia, Slovenia, United Kingdom and Ukraine.

3.3 Continued or increased fossil fuel production

Many fossil-fuel-producing countries use their NDCs and LT-LEDS to highlight plans for continued or even increased extraction of fossil fuels. One-third of first-round NDCs, nearly half of second-round NDCs and more than one-third of LT-LEDS communicate plans to continue or increase fossil fuel production, either explicitly or implicitly.

Some countries explicitly communicate plans to continue or increase fossil fuel extraction, including 12 in first-round NDCs, 23 in second-round NDCs and six in LT-LEDS. This list includes higher-income countries such as Australia (coal), Japan (gas) and the UK (oil and gas). Moreover, 15 new countries expressed their intent to continue or expand fossil fuel production between the first- and second-round NDCs, while only three dropped this reference in their second-round NDC.

Countries' stated justifications for continuing or increasing fossil fuel production are varied and include:

- improving national energy security or self-sufficiency (Albania, 2021; Jordan, 2021)
- reducing the cost of energy (Japan, 2019)
- aspirations to be an emerging economy (Chad, 2021)
- high energy demand due to industrialization (China, 2021)
- achieving the SDGs (Iraq, 2021)
- economic reliance on oil and gas production (Papua New Guinea, 2020)
- meeting the demand of energy-importing countries (Australia, 2021)
- increasing production of natural gas as a contribution to global climate mitigation efforts (Qatar, 2015; Argentina, 2020; Australia, 2021; Tanzania, 2021)
- considering natural gas as a transition fuel (Argentina, 2021)

In addition, many countries implicitly indicate their intentions to continue extraction, detailing policies for reducing emissions from, or introducing adaptation measures for, fossil fuel production (Table 4).

Table 4. Examples of country NDCs mentioning mitigation and adaptation for fossil fuel production, implying continued production

Type of information	Examples	Document	Contents
Mitigation and adaptation measures for the fossil fuel production sector <ul style="list-style-type: none"> • Measures to improve energy efficiency of, and reduce emissions from, fossil fuel production • Inclusion of climate change considerations in the permitting process for fossil fuel production projects • Measures to reduce fugitive emissions, venting and flaring from fossil fuel production • Adaptation measures for fossil fuel production 	Canada 	Second-round NDC	Energy efficiency measures, use of electric steam generators, hydropower and process electrification
	Colombia 	Second-round NDC	Plans to include climate change considerations in the permitting process for fossil fuel production projects
	Brunei 	Second-round NDC	Adoption of the “as low as reasonably possible” principle to achieve zero routine flaring
	Argentina 	Second-round NDC	Measures to ensure resilient fuel production

The number of countries including sectoral emissions reduction measures and/or targets appears to be slightly increasing. Among fossil-fuel-producing countries that submitted both rounds of NDCs, 17 included such policies in first-round NDCs and 20 in second-round NDCs. These measures are undoubtedly important and necessary, because any remaining production needs to be carried out with as few emissions as possible. However, only South Sudan's second-round NDC and India's first-round NDC also include corresponding policies, projections, pathways or targets for a fossil fuel production wind-down. Sometimes sectoral emissions reduction is the only context in which countries mention fossil fuel production at all (Canada, 2017; Mongolia, 2020).

When naming measures to reduce emissions from fossil fuel production, countries commonly highlight approaches such as reducing venting and flaring of methane; improving the efficiency of heaters used for oil extraction; electrification of processes including heat and oil extraction; maximizing condensate recovery; shifting coal transportation for export from truck to rail; and constructing new extraction infrastructure using "best available technologies". Such countries include Brunei Darussalam, Canada, China, Colombia, Ecuador, Egypt, Iraq, Mexico, Nigeria, Qatar, Saudi Arabia and the United Arab Emirates, all in their second-round NDCs.

Countries increasingly mention fossil fuel production in their NDCs in the context of adaptation. We found references to adapting fossil fuel production to climate impacts in only one first-round NDC (Timor-Leste) but in seven second-round NDCs; none of these documents incorporate measures to wind down fossil fuel production. Adaptation measures are largely framed in terms of ensuring access to energy through resilient infrastructure. No LT-LEDS reflect adaptation concerns related to the fossil fuel sector.

3.4 Transition planning

Our findings suggest that countries increasingly mention fossil fuel production in the context of planning a transition away from fossil fuels. However, they do not explicitly state targets or policies for phasing production down. We observed this trend in nine first-round NDCs, 17 second-round NDCs and 15 LT-LEDS (Table 5).

Table 5. Examples of country NDCs and LT-LEDS mentioning transition planning

Type of information	Examples	Document	Contents
Transition planning <ul style="list-style-type: none"> Measures to support workers and communities affected by fossil fuel production and the shift away from it Measures to remediate former fossil fuel production sites Modelling, scenario planning and road-mapping a just transition over the longer term (LT-LEDS) Policies, plans to diversify the economy away from fossil fuel production 	US 	LT-LEDS	Just transition measures targeted at communities dependent on coal mining
	Australia 	LT-LEDS	Plans to build hydrogen, renewable energy and minerals industries to offset impacts on communities from lower global demand for coal and gas
	Bahrain 	First-round NDC	Strategic plan to develop five non-oil economic sectors
	Iraq 	Second-round NDC	Goal of increasing tourism and world heritage sectors to diversify away from oil
	Angola 	Second-round NDC	Plan to enhance agriculture and fisheries industries to reduce oil dependence

The transition is referred to in four main ways. First, many countries cite the need to diversify their economies away from reliance on fossil fuel production. This was mentioned in seven first-round NDCs, 12 second-round NDCs and four LT-LEDS. Economic diversification plans or policies are often lacking, with statements framed in broad, aspirational terms. Australia's LT-LEDS, for example, includes projections for how coal and gas demand would fall and affect their production in the future, and plans for economic diversification into sectors such as hydrogen.

Second, some countries mention the need for a just transition for workers and communities affected by the transition away from fossil fuel production. This was not included in any first-round NDCs but was mentioned in six second-round NDCs and 11 LT-LEDS. Canada was the only country to mention a just transition in both its second-round NDC and its LT-LEDS.

Third, five countries in first-round NDCs, six in second-round NDCs and two in LT-LEDS (Nigeria and Norway) mention fossil fuel production in the context of climate change response measures. Of these, Kuwait, Qatar and Saudi Arabia refer to response measures in both NDCs. Typically these statements reference Articles 4.8 and 4.10 of the UNFCCC, highlighting the potential adverse effects on the country's economy caused by climate change response measures due to dependence on oil and gas revenue (Qatar, 2021).

Fourth, some countries frame their transition concerns in the language of risk. For instance, Norway's LT-LEDS notes that fulfilment of the Paris Agreement or major technological advances may result in lower demand for fossil-based energy and may reduce the value of the remaining oil and gas on the Norwegian continental shelf, highlighting this as a "transition risk". South Africa's LT-LEDS notes the importance of coal to the country's export revenue and the increasing volatility of coal prices and markets due to global decarbonization efforts, implying this poses a risk for the country. Underlying these references are concerns about so-called "stranded assets" (Carbon Tracker Initiative & Grantham Institute, 2013; United Nations University Institute for Natural Resources in Africa, 2019), or investments and natural resources that can no longer be monetized, which one second-round NDC (South Sudan) and six LT-LEDS cite.

3.5 Equity and international support/cooperation

A significant and increasing proportion of countries provide information relevant to how a wind-down in fossil fuel production affects social equity. Specifically, 15% of first-round NDCs, 25% of second-round NDCs and 10% of LT-LEDS from fossil-fuel-producing countries include information about the country's economic dependence on fossil fuel production or exports. Such information is usually provided using the percentage of GDP or export revenue. For instance, Ecuador, Norway, Senegal, South Sudan and Suriname all provide such information in their second-round NDCs (Table 6).

Table 6. Examples of country NDCs mentioning equity in relation to fossil fuel production

Type of information	Examples	Document	Contents
Equity in relation to fossil fuel production <ul style="list-style-type: none"> Quantified information on the extent of economic dependence on fossil fuel production Information on proportion of workforce employed by fossil fuel production Information on national capacity needs to support a just transition away from fossil fuel production A statement of how wind-down targets are fair and ambitious 	Ecuador 	Second-round NDC	Oil as a percentage of the country's export revenue
	Chad 	Second-round NDC	Oil as a percentage of the country's GDP

Fossil-fuel-producing countries increasingly also highlight international support and cooperation regarding a managed transition away from fossil fuel production. Four first-round NDCs, 20 second-round NDCs and five LT-LEDS include statements relating to the need for, or provision of, support in terms of finance or technology. Some countries underscore a need for international support to realize their development objectives, given the present incentive to extract their large and as-yet unexploited oil and gas reserves. For instance, Bosnia and Herzegovina includes in its second-round NDC a conditional emissions reduction target that is contingent on international support for a “fair transition” for its coal mining areas, in the form of capacity-building, training, technology transfer and finance. Kenya has also highlighted the need for international support (Table 7).

Table 7. Examples of NDCs and LT-LEDS mentioning international support and cooperation

Type of information	Examples	Document	Contents
<p>International support and cooperation</p> <ul style="list-style-type: none"> • International support requirements to wind down (or forgo development of) fossil fuel production (finance, capacity building, technology transfer) • Commitment to provide support to assist countries with low capacity to transition away from fossil fuel production • Membership of international fossil fuel phase-out initiatives • Bilateral or multilateral partnerships to support economic diversification • Commitment to end international finance for fossil fuel production projects 	<p>Kenya</p> 	Second-round NDC	Identifies need for international support for development objectives to enable leaving oil and coal reserves unexploited
	<p>Bosnia and Herzegovina</p> 	Second-round NDC	Links international support for an economic diversification in coal mining areas and the development of clean alternative pathways to conditional emissions reduction targets
	<p>Denmark</p> 	LT-LEDS	Influencing other countries to phase out coal generation through the Powering Past Coal Alliance
	<p>European Union</p> 	LT-LEDS	Support for economic diversification in the Gulf region
	<p>France</p> 	LT-LEDS	Ending state export guarantees for exploration and production of coal and unconventional hydrocarbons

Several countries have committed to participating in coalitions, such as the Powering Past Coal Alliance, to influence other countries to phase out fossil fuel production. Some countries also highlight their commitment to ending public export financing of fossil fuel production and redirecting financing to clean energy. For instance, Denmark and France have both made such commitments in their LT-LEDS. Saudi Arabia, in its second-round NDC, highlights its membership of the Net Zero Producers Forum, an international effort to develop pathways to net zero emissions for the global oil and gas sector – which concerns mitigation of emissions from the fossil fuel sector rather than phase-out of fossil fuel production.

4. Conclusion and Implications for the Global Stocktake

This report provides the first full analysis of how countries are addressing fossil fuel production in their NDCs and LT-LEDS submitted under the Paris Agreement and the UNFCCC up to 15 March 2023.

While new efforts have begun to increase transparency around fossil fuel supply, such as the recently released registry on coal, oil and gas reserves (Global Registry of Fossil Fuels, n.d.), countries are still not required to report on fossil fuel expansion plans under the UNFCCC (SEI et al., 2021). The consensus-based nature of UNFCCC processes, combined with the vested interests of fossil fuel producing countries, poses hurdles to any such requirement. This makes it challenging to address fossil fuel transitions within existing UNFCCC processes, including the Global Stocktake.

Indeed, our findings show that fossil-fuel-producing countries currently provide information on fossil fuel production in an ad hoc way. While fossil fuel production is increasingly discussed in NDCs, and in most LT-LEDS, this is generally in the context of plans to continue or increase production, and less so targets, projections or policies to restrict production or wind it down. But meeting Paris Agreement temperature goals in a way that avoids unnecessary disruption requires governments to plan for a managed decline in fossil fuel production.

NDCs and LT-LEDS are a medium through which states can communicate such plans to the international community. In the absence of international reporting requirements on this issue, countries still have an opportunity to include information pertaining to fossil fuel production in their international climate plans because it would be a strong signal of their intentions to align fossil fuel production with what the world needs to meet its climate goals. Both NDCs and LT-LEDS are important in this regard. NDCs are the primary, mandatory document and receive high levels of international attention. Meanwhile, including pathways and plans to transition away from fossil fuel production in LT-LEDS can also be impactful, as these have longer time horizons than NDCs.

In light of growing momentum to connect fossil fuel production and climate goals, transparency with regard to countries' fossil fuel production plans and their alignment with Paris goals is an important step toward assessing progress. Governments of fossil-fuel-producing countries that have not yet addressed their fossil fuel production in their NDCs can rectify this in the next cycle. The benchmarking provided in this report fills the gap in awareness as to how countries may do so.

The upcoming round of NDCs and LT-LEDS provides governments with a significant chance to increase transparency regarding their fossil fuel production plans in several key ways:

1. Countries can include background information on their fossil fuel reserves and plans for extraction, as well as any financial subsidies for fossil fuel production.
2. Many countries lack clear pathways, targets, policies and measures for phasing out fossil fuel production, while others do not share them in the UNFCCC context. Governments with existing policies can integrate them into their NDCs and/or LT-LEDS, while others can plan for this transition.
3. Countries can further develop specific policies and plans to diversify their economies away from fossil fuel production and ensure a fair transition for workers.
4. Countries with sufficient resources can provide more information on their commitments to support the international community in phasing out fossil fuel production, particularly fossil-fuel-dependent countries lacking the resources to do so. Countries with high economic dependence on fossil fuels and limited capacity for transition can strengthen their NDCs and LT-LEDS by identifying needs for international financing, technology transfer and capacity-building to facilitate the transition.

Organizations that assist governments in preparing their NDCs can play a critical role in advising them on how to plan for a just and equitable transition away from fossil fuels. Additionally, researchers and civil society organizations should continue to scrutinize countries' fossil fuel production plans and policies.

The first Global Stocktake under the Paris Agreement presents an opportunity for countries and other stakeholders to gather and review information on the extent to which countries are aligning their fossil fuel production with Paris Agreement goals, including the extent to which they are prioritizing this issue in their NDCs and LT-LEDs.

This assessment of progress allows countries to consider how the ambition levels of these climate plans may grow in subsequent iterations. Building on the current Global Stocktake, the third round of NDC communications in 2025 will offer countries the opportunity to make new commitments to transition away from fossil fuel production and to strengthen the robustness of existing commitments.

References

- Albania. (2021). *Albania Revised NDC*. <https://unfccc.int/sites/default/files/2022-08/Albania%20Revised%20NDC.pdf>
- Angola. (2021). *Nationally Determined Contribution of Angola*. <https://unfccc.int/sites/default/files/NDC/2022-06/NDC%20Angola.pdf>
- Argentina. (2020). *Segunda Contribución Determinada a Nivel Nacional de la República Argentina*. https://unfccc.int/sites/default/files/NDC/2022-06/Argentina_Segunda%20Contribuci%C3%B3n%20Nacional.pdf
- Argentina. (2021). *Actualización de la meta de emisiones netas de Argentina al 2030*. <https://unfccc.int/sites/default/files/NDC/2022-05/Actualizacio%CC%81n%20meta%20de%20emisiones%202030.pdf>
- Australia. (2021). *Australia's Long-Term Emissions Reduction Plan: A whole-of-economy Plan to achieve net zero emissions by 2050*. https://unfccc.int/sites/default/files/resource/Australias_LTS_WEB.pdf
- Aykut, S. C., & Castro, M. (2017). The end of fossil fuels?: Understanding the partial climatization of global energy debates. In *Globalising the Climate*. Routledge.
- Bangladesh. (2021). *Nationally Determined Contributions (NDCs) 2021*. https://unfccc.int/sites/default/files/NDC/2022-06/NDC_submission_20210826revised.pdf
- BOGA. (2021). *At COP26, 11 National and Subnational Governments Launch The Beyond Oil & Gas Alliance*. <https://beyondoilandgasalliance.com/wp-content/uploads/2021/11/11-10-21-BOGA-Press-Release.pdf>
- BP. (2021). *BP statistical review of world energy 2021*. <https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2021-full-report.pdf>
- Canada. (2017). *Canada's 2017 nationally determined contribution submission to the United Nations Framework Convention on Climate Change*. Canada. <https://unfccc.int/sites/default/files/NDC/2022-06/Canada%20First%20NDC-Revised%20submission%202017-05-11.pdf>
- Carbon Tracker Initiative & Grantham Institute. (2013). *Unburnable carbon 2013: Wasted capital and stranded assets*. Carbon Tracker Initiative and Grantham Research Institute on Climate Change and the Environment. <http://carbontracker.live.kiln.it/Unburnable-Carbon-2-Web-Version.pdf>
- Chad. (2021). *Mise a Jour de la Contribution Déterminée Nationale (CDN)*. <https://unfccc.int/sites/default/files/NDC/2022-06/CDN%20ACTUALISEE%20DU%20TCHAD.pdf>
- Chan, N. (2016). The 'new' impacts of the implementation of climate change response measures. *Review of European, Comparative & International Environmental Law*, 25(2), 228–237. <https://doi.org/10.1111/reel.12161>
- China. (2021). *China's Achievements, New Goals and New Measures for Nationally Determined Contributions (Unofficial Translation)*. <https://unfccc.int/sites/default/files/NDC/2022-06/China%E2%80%99s%20Achievements%2C%20New%20Goals%20and%20New%20Measures%20for%20Nationally%20Determined%20Contributions.pdf>
- Colombia. (2020). *Actualización de la Contribución Determinada a Nivel Nacional de Colombia (NDC)*. <https://unfccc.int/sites/default/files/NDC/2022-06/NDC%20actualizada%20de%20Colombia.pdf>

- Depledge, J. (2008). Striving for No: Saudi Arabia in the Climate Change Regime. *Global Environmental Politics*, 8(4), 9–35. <https://doi.org/10.1162/glep.2008.8.4.9>
- Espinosa, P. (2018, April 12). We need long-term strategies to meet the climate challenge. *United Nations Framework Convention on Climate Change*. <https://unfccc.int/news/we-need-long-term-strategies-to-meet-the-climate-challenge>
- EU. (2018). *In-Depth Analysis in Support of the Commission Communication COM (2018) 773*. European Commission. https://knowledge4policy.ec.europa.eu/publication/depth-analysis-support-com2018-773-clean-planet-all-european-strategic-long-term-vision_en
- EU. (2020). *Update of the NDC of the European Union and its member states: Submission by Germany and the European Commission on behalf of the European Union and its Member States*. European Commission. https://unfccc.int/sites/default/files/NDC/2022-06/EU_NDC_Submission_December%202020.pdf
- Foreign, Commonwealth & Development Office. (2022, December 14). *Political declaration on establishing the Just Energy Transition Partnership with Viet Nam*. <https://www.gov.uk/government/publications/vietnams-just-energy-transition-partnership-political-declaration/political-declaration-on-establishing-the-just-energy-transition-partnership-with-viet-nam>
- Global Registry of Fossil Fuels. (n.d.). *Global Registry of Fossil Fuels*. <https://fossilfuelregistry.org/>
- IEA. (2021). *Net zero by 2050: A roadmap for the global energy sector*. International Energy Agency. <https://www.iea.org/reports/net-zero-by-2050>
- Indonesia, Japan, the US, Canada, Denmark, the EU, Germany, France, Norway, Italy, & the UK. (2022). *Joint Statement by the Government of the Republic of Indonesia (GOI) and the Governments of Japan, the United States of America, Canada, Denmark, the European Union, the Federal Republic of Germany, the French Republic, Norway, the Republic of Italy, and the United Kingdom of Great Britain and Northern Ireland (together the 'International Partners Group' or IPG)*. <https://www.whitehouse.gov/wp-content/uploads/2022/11/Joint-Statement.pdf>
- Iraq. (2021). *Nationally Determined Contributions of Iraq (NDC)*. <https://unfccc.int/sites/default/files/NDC/2022-06/Iraq%20NDC%20Document.docx>
- Japan. (2019). *The long-term strategy under the Paris Agreement*. <https://unfccc.int/sites/default/files/resource/The%20Long-term%20Strategy%20under%20the%20Paris%20Agreement.pdf>
- Jones, N., Lee, A., Muñoz Cabré, M., & Verkuil, C. (2022). *Database: Fossil Fuel Production Commitments under the UNFCCC*. Stockholm Environment Institute. <http://www.sei.org/publications/ndcs-lt-leds-dataset-fossil-fuel-plan>.
- Jones, N., Muñoz Cabré, M., Piggot, G., & Lazarus, M. (2021). *Tapping the potential of NDCs and LT-LEDS to address fossil fuel production*. Stockholm Environment Institute. <https://www.sei.org/publications/ndcs-leds-fossil-fuel-production>
- Jordan. (2021). *Updated Submission of Jordan's 1st Nationally Determined Contribution (NDC)*. <https://unfccc.int/sites/default/files/NDC/2022-06/UPDATED%20SUBMISSION%20OF%20JORDANS.pdf>
- McGibbon, A. (2023). *Promise Breakers: Assessing the impact of compliance with the Glasgow Statement commitment to end international public finance for fossil fuels*. Oil Change International. <https://priceofoil.org/2023/03/15/promise-breakers-assessing-the-impact-of-compliance-with-the-glasgow-statement-commitment-to-end-international-public-finance-for-fossil-fuels/>
- Mexico. (2020). *Nationally Determined Contributions. 2020 Update*. <https://unfccc.int/sites/default/files/NDC/2022-06/NDC-Eng-Dec30.pdf>
- Mongolia. (2020). *Mongolia's Nationally Determined Contribution to the United Nations Framework Convention on Climate Change*. <https://unfccc.int/sites/default/files/NDC/2022-06/First%20Submission%20of%20Mongolia%27s%20NDC.pdf>
- Papua New Guinea. (2020). *Papua New Guinea's Enhanced Nationally Determined Contribution 2020*. <https://unfccc.int/sites/default/files/NDC/2022-06/PNG%20Second%20NDC.pdf>
- Piggot, G., Erickson, P., van Asselt, H., & Lazarus, M. (2018). Swimming upstream: Addressing fossil fuel supply under the UNFCCC. *Climate Policy*, 18(9), 1189–1202. <https://doi.org/10.1080/14693062.2018.1494535>
- Qatar. (2015). *Intended Nationally Determined Contributions (INDCs) report*. <https://www4.unfccc.int/sites/submissions/INDC/Published%20Documents/Qatar/1/Qatar%20INDCs%20Report%20-English.pdf>
- Qatar. (2021). *Nationally Determined Contribution (NDC)*. <https://unfccc.int/sites/default/files/NDC/2022-06/Qatar%20NDC%20-%20Arabic.pdf>

- SEI, IISD, ODI, Climate Analytics, CICERO, & UNEP. (2019). *The Production Gap: The discrepancy between countries' planned fossil fuel production and global production levels consistent with limiting warming to 1.5°C or 2°C*. Stockholm Environment Institute, International Institute for Sustainable Development, Overseas Development Institute, Climate Analytics, CICERO Center for International Climate Research and United Nations Environment Programme. <http://productiongap.org/2019report/>
- SEI, IISD, ODI, E3G, & UNEP. (2021). *The Production Gap Report 2021*. Stockholm Environment Institute, International Institute for Sustainable Development, Overseas Development Institute, E3G and United Nations Environment Programme. <https://productiongap.org/2021report/>
- Slovakia. (2020). *Low-Carbon Development Strategy of the Slovak Republic until 2030 with a view to 2050*. <https://unfccc.int/sites/default/files/resource/LTS%20SK%20eng.pdf>
- South Africa, the UK, the US, France, Germany, & the EU. (2021, November 2). *Political Declaration on the Just Energy Transition in South Africa*. UN Climate Change Conference (COP26) at the SEC – Glasgow 2021. <https://ukcop26.org/political-declaration-on-the-just-energy-transition-in-south-africa/>
- South Sudan. (2021). *South Sudan's Second Nationally Determined Contribution*. <https://unfccc.int/sites/default/files/NDC/2022-06/South%20Sudan%27s%20Second%20Nationally%20Determined%20Contribution.pdf>
- Tanzania. (2021). *Nationally Determined Contribution*. https://unfccc.int/sites/default/files/NDC/2022-06/TANZANIA_NDC_SUBMISSION_30%20JULY%202021.pdf
- The Shift Project. (n.d.). *The Shift Dataportal*. <https://www.theshiftdataportal.org/>
- UN Climate Change Conference UK 2021. (2021). *Statement on International Public Support for the Clean Energy Transition*. <https://ukcop26.org/statement-on-international-public-support-for-the-clean-energy-transition/>
- UNFCCC. (n.d.-a). *Long-term strategies portal*. United Nations Framework Convention on Climate Change. <https://unfccc.int/process/the-paris-agreement/long-term-strategies>
- UNFCCC. (n.d.-b). *NDC Registry*. Retrieved 18 June 2019, from <https://www4.unfccc.int/sites/NDCStaging/Pages/All.aspx>
- UNFCCC. (2015a). *Adoption of the Paris Agreement*. UNFCCC. <http://unfccc.int/resource/docs/2015/cop21/eng/10a01.pdf>
- UNFCCC. (2015b). *Paris Agreement*. https://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf
- UNFCCC. (2018). *Matters relating to Article 14 of the Paris Agreement and paragraphs 99–101 of decision 1/CP.21*. <https://unfccc.int/node/187579>
- UNFCCC. (2021). *Glasgow Climate Pact (FCCC/PA/CMA/2021/L.16)*. https://unfccc.int/sites/default/files/resource/cma2021_L16_adv.pdf
- UNFCCC. (2022). *Sharm el-Sheikh Implementation Plan (Decision-/CP.27)*. https://unfccc.int/sites/default/files/resource/cop27_auv_2_cover%20decision.pdf
- United Nations University Institute for Natural Resources in Africa. (2019). *Africa's development in the age of stranded assets [Discussion Paper]*. https://i.unu.edu/media/inra.unu.edu/publication/5247/Discussion-paper-Africas-Development-in-the-age-of-stranded-Assets_INRAReport2019.pdf
- Verkuijl, C., Jones, N., & Lazarus, M. (2019). *Untapped ambition: Addressing fossil fuel production through NDCs and LEDS*. Stockholm Environment Institute. <https://www.sei.org/publications/addressing-fossil-fuel-production-through-ndcs-and-leds/>
- Zambia. (2020). *Nationally Determined Contribution for Zambia*. https://unfccc.int/sites/default/files/NDC/2022-06/Final%20Zambia_Revised%20and%20Updated_NDC_2021_.pdf

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