# Leading the Transition Locally

## A policy toolkit to address fossil fuel production for subnational states and regions

IISD REPORT


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# Executive Summary

Subnational states and regions[1] are powerful drivers of both implementation and ambition in achieving the goals of the Paris Agreement. Not only are they key executors of national policies, but subnational governments around the world are developing their own targets and policies.

At the 28th United Nations Climate Change Conference (COP 28), the historic UAE Consensus called upon all parties to the Paris Agreement to contribute to transitioning away from fossil fuels 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. This transition must include both consumption and production of fossil fuels. In this publication, we focus on the production of fossil fuels, since it is an area that is under-researched and under-equipped, but increasingly prominent in policy and academic debates on transitioning away from fossil fuels.

The subnational state and region level is critical to achieving this transition. While the vast majority of global fossil fuel production is managed by national governments and/or the private sector, their extraction facilities, workforces, and communities exist within states and regions.

Given the high economic and political dependence of certain states and regions on fossil fuel extraction, they will be critical movers in the transition. In addition, as the global energy transition unfolds, global demand for fossil fuels will decline, leading to lower revenues for subnational governments, and specific policies will be needed to actively diversify the economy and government revenue streams away from fossil fuels, alongside protecting regional workers and communities.

This need is further underscored by the current context of geopolitical instability and heightened volatility in international commodity markets (particularly oil and gas), which exposes the fiscal vulnerability of fossil fuel-dependent regions and reinforces the case for building more resilient, diversified economic systems.

This report aims to explore and document the role of subnational governments in advancing a just, orderly, and equitable transition away from fossil fuel production as a critical element of the overall transition away from fossil fuels. Drawing on desk research and interviews with subnational governments, it presents a policy toolkit with practical guidelines and actionable insights for these governments.

[1] We use the term "subnational states and regions" to describe administrative divisions of a sovereign state, noting that many such jurisdictions use different words to describe themselves. For example, the devolved administrations of the United Kingdom are nations. In Switzerland, subnational entities are called "cantons." Other common names for subnational jurisdictions include province and prefecture.

## Challenges and Opportunities for Transitioning Away From Fossil Fuel Production

We consider four broad types of subnational states and regions when it comes to transitioning away from fossil fuel production, depending on the status of their fossil fuel production and the reserves they are endowed with (see methodology section).

Each type of subnational state or region faces key challenges to the transition and has corresponding policy options available. While resource endowments and levels of economic development vary, there are certain enabling conditions for success. One is a strong policy mandate, such as a legally binding net-zero emissions target and/or a climate strategy at the state/regional level that pursues policy coordination with relevant national/federal policies. Strong political leadership is another key enabling condition—a consistent commitment to credible climate action, advocacy, and accountability. A third enabler of success is a community-centred approach coupled with transparent communication, which builds trust and ensures policies reflect local needs.

Against this backdrop of diverse production profiles, economic dependencies, and political constraints, subnational governments require flexible policy approaches. This policy toolkit outlines a range of instruments that states and regions can draw on and combine in different ways to support a just, orderly, and equitable transition away from fossil fuel production.

We argue that for subnational governments that are willing and able to act as early movers, there is a clear opportunity to begin implementing concrete measures now, positioning their economies to benefit from emerging low-carbon industries. Early action can help reduce transition risks, attract investment, and establish these regions as leaders in transitioning away from fossil fuels. In this sense, transitions can support a vision of prosperity beyond net-zero, where climate action not only reduces emissions but also strengthens long-term economic resilience, innovation capacity, and inclusive growth in fossil fuel-dependent regions.

## Policy Toolkit

There are three policy objectives (Figure ES1) that any subnational government seeking to transition away from fossil fuel production should aspire to: proactively managing the transition, reducing emissions in the fossil fuel production sector, and diversifying the local economy while mitigating transition risk and equity concerns. There is, of course, overlap among these categories, particularly the first and third.

Each type of policy objective faces distinct political, economic, and social constraints, requiring differentiated policy approaches rather than a single pathway.

**Figure ES1.** Examples of policies that states and regions can adopt for transitioning away from fossil fuel production


| THE PHASE-OUT<br>Managing the Transition | THE CLEAN UP<br>Reducing Environmental Impacts of Operations | THE PEOPLE<br>Ensuring Equity and Justice |
|---|---|---|
| **Bans and moratoriums:** prohibit new exploration, extraction, or fracking<br>**Production ceilings:** cap the total output of oil and gas<br>**Protected zones:** declare protected zones for exploration/extraction<br>**Mandate comprehensive environmental impact assessment**<br>**Decommissioning regulations** | **Emissions cap:** Set a cap for O&G sector emissions.<br>**Stringent environmental permitting requirements:** for preventing soil, water, and air pollution<br>**Clean energy mandates:** For renewable energy use and/or electrification.<br>**Methane emissions regulations:** Set up regulations to avoid/reduce fugitive emissions. | **Royalty earmarking:** for economic diversification purposes.<br>**Local content requirements:** for new economic sectors. |
| **Production taxes and royalty funds:** can be used to manage the transition<br>**Reform subsidies:** targeted at fossil fuel production<br>**Orphan well levy or environmental liabilities fund:** decommissioning of targeted fossil fuel assets | **Industrial carbon pricing systems**<br>**Subsidies and other public finance:** for the decarbonization of fossil fuels production | **Social and infrastructure investment:** in the regions affected by the transition.<br>**Financial assistance for workers:** to find re-employment, relocate, retrain, or provide a bridge to retirement<br>**Just Transition Fund:** to support workers and communities |
| **Funds and instruments for production rights:** can be used to acquire production rights and ensure reserves are left in the ground<br>**Divestment:** from fossil fuel producing companies | | **Social dialogues:** On the future of fossil fuel dependent regions.<br>**Inventory of labour market:** including information on workers in and outside the fossil fuel sector and their skills |
| **Engagement with communities:** Engage with people affected by existing and new fossil projects<br>**Task forces:** Use expert panels to build evidence for phase-outs.<br>**International alliances:** Join international alliances like BOGA, COFFIS, Methane Action Coalition, etc. | | |

Source: Authors' analysis.

## Recommendations

All subnational states and regions in which fossil fuels are produced or where there are reserves or exploration have many tools at their disposal for a just, orderly, and equitable transition away. However, there is no one-size-fits-all package, and the degree of regulatory or financial autonomy is geographically varied amongst states and regions. State and regional governments need to assess the situation, consult, and decide what is best for their unique circumstances, aiming at a balance between coherence of the policy with its stated policy goals, sufficient implementation means, and coordination with broader subnational and national policy.

For subnational governments that are willing and able to act as early movers, there is a clear opportunity to begin implementing concrete measures now—testing policy approaches, building institutional capacity, and positioning their economies to benefit from emerging low-carbon industries.

We recommend that subnational states and regions

- **diversify the local economy while pursuing a just, orderly, and equitable transition away from fossil fuel production:**
    - develop roadmaps to transition away from fossil fuel production in a just, orderly, and equitable manner, which are time-bound, sequenced, and financed, and designed using whole-of-government and whole-of-society approaches;
    - integrate multiple policy objectives and tools, rather than relying on stand-alone measures;
    - set out clear pathways and policies to transition away from production while supporting workers and communities and diversifying regional economies;
    - co-design and implement roadmaps through a dedicated task force and structured consultation with all affected stakeholders;
    - focus economic diversification efforts on activities that reduce reliance on fossil fuels, rather than reinforcing it through downstream or energy-intensive activities such as refining, petrochemicals, carbon capture and storage, or fossil fuel-based power and heavy industry, which lock in emissions and increase economic dependence on fossil fuels.
- **reduce greenhouse gas emissions from existing fossil fuel production operations**, particularly Scope 1 and 2 emissions:
    - use emissions-reduction measures to complement, not substitute for, a transition away from production;
    - prioritize these measures as short- to medium-term actions while transition plans are implemented;

    - focus economic diversification efforts on low-carbon and forward-looking sectors that support long-term resilience and alignment with climate objectives.

- **strengthen multilevel engagement and policy alignment:**
    - engage closely with cities, municipalities, and local communities on the energy transition;
    - develop and communicate clear policy positions, including on policy areas formally reserved to the national level, and advocate for national transition plans and roadmaps;
    - align subnational actions, where relevant, with nationally determined contributions, national adaptation plans, national investment plans, and donor frameworks.
- **engage in international cooperation and peer learning:**
    - participate in initiatives such as the Beyond Oil and Gas Alliance, the Powering Past Coal Alliance, the Subnational Methane Action Coalition, the Fossil Fuel Treaty, and the Coalition on Phasing Out Fossil Fuel Incentives Including Subsidies;
    - engage with convenings hosted by the Under2 Coalition to support peer exchange, skills development, and navigation of the international policy landscape.

# Table of Contents

## List of Figures



## List of Tables



## List of Boxes

# Abbreviations and Acronyms

| | |
|---|---|
| **BECCS** | bioenergy with carbon capture and storage |
| **BOGA** | Beyond Oil and Gas Alliance |
| **COFFIS** | Coalition on Phasing Out Fossil Fuel Incentives Including Subsidies |
| **IEA** | International Energy Agency |
| **IISD** | International Institute for Sustainable Development |
| **JETP** | just energy transition partnership |
| **MGCA** | Mpumalanga Green Cluster Agency |
| **MGEDP** | Mpumalanga Green Economy Development Plan |
| **OECD** | Organisation for Economic Co-operation and Development |
| **SMAC** | Subnational Methane Action Coalition |

# 1.0
# Introduction

At the 28th United Nations Climate Change Conference (COP 28), the historic UAE Consensus called upon all parties to the Paris Agreement to contribute to transitioning away from fossil fuels 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. At COP 30, the Brazilian Presidency announced that it would develop a global roadmap to achieve such a transition, and in 2026, the governments of Colombia and the Netherlands will convene the first international conference on the just transition away from fossil fuels.

These developments are taking place against a backdrop of increasing geopolitical instability and heightened volatility in international energy markets, particularly for oil and gas, which has underscored the economic, trade, and fiscal risks associated with continued dependence on fossil fuels both for importers and exporters. At both national and subnational levels, this context reinforces the urgency of proactively managing the transition to enhance resilience and reduce exposure to external shocks.

The subnational state/region level is critical to achieving a transition away from fossil fuels. While the vast majority of global fossil fuel production is managed by national governments and/or the private sector, their extraction facilities, workforce, and communities exist within states and regions. These subnational governments are a critical node within the global fossil fuel economy.

According to the authors' calculations based on data from Rystad Energy's UCube, in 2024 about 73% of the world's oil, 71% of gas, and all coal was produced within these territories (the rest was produced offshore) (Rystad Energy, 2026). This gives them a pivotal governance role, along with national governments, in shaping how production declines and how communities adapt. However, the question of how states and regions can contribute to the transition away from fossil fuel production represents a gap in the research to date.

Subnational states and regions are powerful drivers of ambition to achieve the goals of the Paris Agreement. Not only are they key implementers of national policies, but subnational governments around the world are developing their own targets and policies. Overall, 217 states and regions have set net-zero targets (Net Zero Tracker, n.d.), and in 2019, subnational governments accounted for an average of 69% of climate-related public investment in 32 Organisation for Economic Co-operation and Development (OECD) and EU countries (OECD, 2022).

If subnational states and regions' climate commitments are fully implemented, projected greenhouse gas emissions in 2030 would be 3.8%–5.5% lower compared to scenario projections for national policies (Kuramochi et al., 2020). The mitigation potential of states and regions is extremely large, not least because regions add up to almost the global total emissions level—excluding international shipping and aviation (Wong et al., 2023). States and regions operate 44% of global carbon pricing instruments, demonstrating that they hold significant regulatory powers (World Bank, n.d.-b).

### Box 1. Definition of subnationals

The term "subnational states and regions" is used to describe administrative divisions of a sovereign state, noting that many such jurisdictions use different words to describe themselves. For example, the devolved administrations of the United Kingdom are referred to as nations, while in Switzerland, subnational entities are called cantons. Other common terms include province, state, prefecture, and region.

Importantly, subnational governments vary widely in their legal authority, institutional powers, and available resources, depending on a country's constitutional arrangements and degree of decentralization. In federal systems, subnational governments often hold extensive powers over land-use planning, environmental regulation, economic development, and, in some cases, the management or permitting of natural resources (Wong et al., 2023). In more centralized or unitary systems, subnational authorities may have narrower mandates but still play a significant role in implementing national policies, delivering social services, convening stakeholders, and shaping local development strategies (Wong et al., 2023).

Because of these differences, our analysis focuses not on a single model of subnational authority, but on the range of actions that subnational governments can take within their respective competencies, including regulatory measures, fiscal tools, planning functions, and convening or coordination roles.

The role of states and regions has become increasingly prominent, as some national governments are accelerating their transitions, while others are moving backwards. In this context, subnational governments have become essential catalysts for progress toward the Paris Agreement goals and are active contributors to stabilizing global climate politics.

Given the high economic and political dependence of certain states and regions in intensive fossil fuel extraction regions, they will be critical movers in the transition. As the global energy transition unfolds, global demand for fossil fuels will decline, leading to reduced revenues for subnational governments. In response, targeted policies will be needed to actively protect regional workers and communities, and to support the diversification of revenue streams away from fossil fuel production. These policies will also need to address the environmental impacts and liabilities associated with the progressive closure of fossil fuel projects.

At the same time, short-term periods of elevated fossil fuel prices, such as those observed in the current context of geopolitical tensions in the Middle East, can generate windfall revenues for some exporting regions. If strategically managed, these revenues present a critical opportunity to invest in economic diversification, workforce transition, and social protection measures, thereby strengthening long-term resilience. This is particularly important given that high price environments also incentivize importing countries to accelerate their shift away from fossil fuel dependence, which is likely to contribute to sharper demand declines and lower prices in the future.

This report explores how subnational governments can advance a just, orderly, and equitable transition away from fossil fuel production.

## 1.1 Methodology

This policy toolkit provides practical guidelines and actionable insights for subnational governments. The tools provide a portfolio of options these governments and policy-makers can use to shape, not just react to, national and market developments.

Interviews were conducted with six subnational governments that have already implemented some of the measures discussed in this publication. These interviews included mid-level and senior officials working in departments responsible for energy, economic development, environmental regulation, or planning for a just transition. The insights drawn from these conversations were synthesized for this publication to identify common implementation challenges, enabling factors, and lessons that could be generalized for a broader audience.

To facilitate navigating through our report and synthesizing the findings of our research, we consider four broad types of subnational states and regions when it comes to transitioning away from fossil fuel production:

- subnational states and regions with no fossil fuel production and no known significant reserves;
- subnational states and regions with no fossil fuel production but significant discovered reserves;
- subnational states and regions that have fossil fuel production, but this is in structural decline; and
- subnational states and regions that have fossil fuel production that is stable or increasing, with considerable reserves existing.

At the same time, we recognize that this typology does not capture the full diversity of regional contexts, particularly differences in levels of economic development, institutional capacity, and fiscal resources between regions in the Global North and Global South. These differences can significantly affect the feasibility and pace of implementing transition policies. In addition, considerations of equity and the principle of common but differentiated responsibilities suggest that fossil fuel phase-out timelines should reflect historical responsibility and capacity, implying that regions in the Global North should move more quickly in transitioning away from fossil fuel production. The typology should therefore be understood as a navigational and organizational device, rather than a normative framework prescribing identical policy pathways or timelines across all regions.

In terms of geographic representation, two thirds of these governments came from the Global North, while one third came from the Global South. One third came from states with unitary governance systems, while two-thirds came from states with federal or devolved governance systems. A similar imbalance between Global North and Global South countries, and between federal and unitary states, was evidenced in the literature review, highlighting the need for further research on the specific challenges and opportunities that subnational states and regions from the Global South, and those in unitary states, face to implement climate and environmental policy.

This report is targeted for subnational governments that are willing and able to act as early movers, regardless of whether they are in the Global North or Global South. Early movers have a clear opportunity to begin implementing concrete measures now, positioning their economies to benefit from emerging low-carbon industries and reducing transition risks, attracting investment, and establishing themselves as leaders in transitioning away from fossil fuels.

# 2.0
# Why Transition Away From Fossil Fuel Production?

The "transition away from fossil fuels" agreed to at COP 28 must be a transition away from fossil fuel production as well as consumption. The amount of carbon contained in total fossil fuel reserves vastly outstrips that which can be safely burned in a scenario compatible with Paris goals: to achieve the 2°C goal, more than 80% of coal reserves, half of gas reserves, and one third of oil reserves need to remain untouched (McGlade & Ekins, 2015). Achieving the 1.5°C goal would require 89% of coal reserves, 58% of oil reserves and 59% of gas reserves to stay in the ground (Welsby et al., 2021).

It is, therefore, not surprising that the International Energy Agency (IEA) has found that no new fossil fuel extraction projects are needed in its Net Zero Emissions by 2050 scenario—a conclusion that holds across all credible Intergovernmental Panel on Climate Change 1.5°C scenarios (Bois von Kursk et al., 2022; Green et al., 2024; IEA, 2023a).[2] Since it is more legally, politically, and economically feasible to restrict new fossil fuel projects than to close existing projects early, there is a strong normative case that new fossil fuel projects ought not to be permitted (Green et al., 2024).

From a development and equity perspective, and consistent with the principle of common but differentiated responsibilities and respective capabilities, it is critical that fossil fuel-producing countries in the Global North take the lead in phasing down production, thereby easing adjustment pressures on regions in the Global South, where the capacity and financial resources are more constrained.

To meet the 1.5°C goal, coal production needs to be nearly completely phased out by 2040, and oil and gas production and use need to decline by at least three quarters from 2020 to 2050 (SEI et al., 2023). However, government plans do not reflect the need to stop fossil fuel expansion and phase out global coal, oil, and gas supply and demand rapidly and substantially between now and mid-century. Rather, national governments are planning on producing around 120% more fossil fuels in 2030 than would be consistent with limiting warming to 1.5°C (SEI et al., 2025). This raises the question of what subnational states and regions can do to advance the transition away from fossil fuel production.

While there are considerable fiscal, economic, and social challenges that need to be addressed to achieve the transition in fossil fuel dependent regions, proactive policies to manage a transition away from fossil fuel production, alongside fossil fuel demand, have several economic and political benefits (Green & Denniss, 2018), particularly when compared with a market-driven (i.e., unplanned transition). These benefits include low administrative and transaction costs, higher certainty of abatement outcomes, comprehensive within-sector coverage, price and efficiency effects, avoiding infrastructure lock-in, and greater potential to mobilize public support for policy.

In addition, the transition can have other societal benefits, such as improved health for local communities served by state and regional governments (e.g., due to lower air and water pollution levels). Finally, by protecting local economies and the rights of those most affected

[2] "Credible" 1.5°C scenarios are defined as those whose usage of bioenergy with carbon capture and storage (BECCS) or fossil CCS raise low or no feasibility concerns. Scenarios whose usage of BECCS or fossil CCS is categorized by the Intergovernmental Panel on Climate Change as raising medium to high feasibility concerns were excluded from the analysis in Bois von Kursk et al. (2022) and Green et al. (2024).

by the decline in oil production, a managed and orderly transition can make climate action more legitimate and resilient (González-Espinosa & Bailey, 2025).

Moreover, economic diversification, which is an important building block of transition plans in regions highly dependent on fossil fuel extraction, can also generate broader and more durable development benefits by reducing regional dependence on a single extractive industry and opening opportunities in emerging sectors such as renewable energy, clean manufacturing, sustainable services, and knowledge-based activities. In this sense, transitions can support a vision of prosperity beyond net-zero, where climate action not only reduces emissions but also strengthens long-term economic resilience, innovation capacity, and inclusive growth in fossil fuel-dependent regions (Lacey-Barnacle et al., 2026).

# 3.0
# Subnational Policies for Transitioning Away From Fossil Fuel Production

There are three policy objectives that subnational governments seeking to transition away from fossil fuel production should aspire to: managing the transition, reducing the environmental impacts of the fossil fuel production sector, and diversifying the local economy while mitigating transition risk and equity concerns. There is, of course, overlap among these categories, particularly the first and third.

First, managing the transition away from fossil fuel production entails policies and measures to wind down production (or forestall it, if production has not yet begun). As canvassed in Section 2, this is a necessary policy objective to meet the Paris Agreement goals.

Reducing the environmental impacts of the fossil fuel production sector is a second important policy objective. Among the most important environmental impacts of the fossil fuel sector are its greenhouse gas emissions. Scope 1 and 2 emissions from oil and gas production, transport, and processing accounted for 5.1 billion tonnes $CO_2$eq in 2022, just under 15% of total energy-related greenhouse gas emissions (IEA, 2023b).

Methane emissions accounted for nearly half of this (IEA, 2023b). While reducing emissions from production should not substitute for the first policy objective of transitioning away from production itself—75% to 85% of the emissions from fossil fuel production come from end-use combustion (Eugène, 2021)—it is a necessary complement. Other environmental impacts, such as soil and water pollution, are also quite significant and have a much more direct impact on the communities near fossil fuel extraction projects. Addressing those is also an important objective for subnational governments to pursue.

The third policy objective is to diversify the local economy while ensuring a just and equitable transition. The need for a just and equitable transition is increasingly recognized in climate policy and political discourse. The imperative of "a just transition of the workforce and the creation of decent work and quality jobs" was included in the preamble to the Paris Agreement (United Nations Framework Convention on Climate Change, 2015) and has since then expanded substantially to include broader local communities affected by the transition, particularly marginalized groups such as women, Indigenous Peoples, and youth.

In fossil fuel-dependent regions, this objective increasingly encompasses economic diversification and the creation of alternative sources of employment and public revenue, which are essential to managing structural economic change and avoiding long-term regional economic decline. A growing body of literature on just transitions highlights that supporting diversified, resilient regional economies, through new industries, skills development, and investment in local infrastructure, is central to ensuring that the benefits and costs of the transition are shared more equitably across workers, communities, and generations (Harrahill & Douglas, 2019; Hasan et al., 2024; Schulz & Schwartzkopff, 2016).

Since fossil fuel reserves are often concentrated geographically, subnational states and regions that extract fossil fuels are more dependent on them economically and politically and suffer more directly the environmental and social impacts of fossil fuel extractions; they therefore face higher social, economic, and environmental risks of an unmanaged transition, i.e., one that occurs without government mechanisms in place to diversify the local economy and support workers and communities. This higher dependence and risk mean that they are key implementation drivers of a just energy transition.

In Table 1, we present a typology of policies that subnational states and regions can use to transition away from fossil fuel production. This typology builds on two existing categorizations. First, we build on the distinction between "hard" and "soft" power made in Wong et al. (2023), which we rename "direct tools" and "enabling tools." Hard power, or direct tools, refers to "carrot and stick" and "push and pull" policies. Wong et al. (2023) consider two dimensions of direct tools: financial and regulatory. Financial direct tools entail "the ability to achieve certain outcomes using financial measures," such as the ability to levy taxes and allocate spending (Wong et al., 2023, p. 28). Regulatory direct tools "refers to the ability to achieve certain outcomes through setting and enforcing regulation" (Wong et al., 2023, p. 28).

In addition to these two dimensions, we add a third: government provision of goods, services, or funds, or the restriction thereof. "Soft" power, or "enabling tools," by contrast, relies on mechanisms other than coercion to obtain specific outcomes. It is the "ability to get others to want the outcomes that you want" (Wong et al., 2023, p. 29).

Second, we build on the taxonomy of supply-side climate policy offered in Lazarus & Asselt (2018), but we also integrate measures to reduce emissions in the fossil fuel production sector, along with measures to mitigate transition risk and equity concerns. We also adapt this framework to exclude measures that are not appropriate for subnational governments, such as policies to restrict export credit agency or multilateral development finance for fossil fuel supply projects.

Not all states and regions will have all policies at their disposal, and there is no one-size-fits-all package. Moreover, as the literature on policy mixes has made clear, effective transitions depend not on individual instruments, but on how combinations of policies interact within specific institutional and governance contexts. Designing and implementing such policy mixes is inherently complex, requiring attention to coherence, consistency, and coordination across sectors and levels of government, as well as sufficient administrative and financial capacity for implementation (Rogge & Reichardt, 2016). Subnational governments should, therefore, implement policies aiming at balancing the coherence of the policy with its stated policy goals, sufficient implementation means, and coordination with broader subnational and national policy.

It is important for states and regions to define what lies within their own powers, and what areas are reserved for the federal or national government. For example, in some countries, fossil fuel extraction licences or permits are issued by a national government department or agency. This is the case, for instance, in major producing countries such as Norway and Brazil. Subnational governments in these countries will thus not be able to end new oil and gas exploration licences, nor place a moratorium on extraction. Similarly, not all subnational governments have the power to levy their own taxes or provide subsidies. However, all state and regional governments will be able to find something within this typology that aligns with their circumstances.

In areas that are reserved to the national government, states, and regions can still develop strong policy positions, stress the importance of diversifying the local economies and developing a just transition plan, and look to initiate a conversation on this topic at the

national government level. Likewise, state and regional governments may find it helpful to work with city and municipality governments, which can also hold important levers of power and send strong demand signals. Working in unison across levels of governance can accelerate action. The swiftest and most effective action to transition away from fossil fuels will be truly multilevel in design and implementation.

**Table 1.** Examples of policies that states and regions can adopt for transitioning away from fossil fuel production

| | Type of policy/ policy objective | Supply-side policies | Reducing the environmental impacts of the fossil fuel production sector | Diversifying the local economy while ensuring the transition is just and equitable |
|---|---|---|---|---|
| **Direct tools** | Financial | • Resource production taxes and royalty funds<br>• Reform or removal of production subsidies<br>• Production ceilings and quotas<br>• Orphan well levy<br>• Assets decommissioning & environmental liabilities management fund | • Industrial carbon pricing systems<br>• Subsidies or public finance for the decarbonization of production | • Taxes earmarked for supporting local communities and economic diversification<br>• Tax breaks for new industries<br>• Sovereign funds targeted at financing transition investments |
| | Regulatory | • Ban on onshore or offshore oil and gas drilling and/or coal mining<br>• Fracking moratorium<br>• End to new exploration or extraction licensing<br>• Setbacks and protected zones<br>• Comprehensive emissions assessment in environmental impact review of new fossil fuel supply projects<br>• Restrict leasing of state-owned lands and waters for fossil fuel development<br>• Decommissioning regulations and land-use plans | • Sector-specific carbon emissions cap<br>• Mandates for clean energy use and electrification<br>• Methane emissions regulations | • Royalties earmarked for economic diversification<br>• Green industrial strategies/ policies |

| | Type of policy/ policy objective | Supply-side policies | Reducing the environmental impacts of the fossil fuel production sector | Diversifying the local economy while ensuring the transition is just and equitable |
|---|---|---|---|---|
| | Government provision of goods, services, or funds, or the restriction thereof | • Funding or policy instruments designed to acquire production rights and compensate resource owners to leave fossil fuel reserves undeveloped<br>• Divestment from companies involved in fossil fuel production | | • Social and infrastructure investments in the region<br>• Financial assistance for workers to find re-employment, relocate, retrain, or provide a bridge to retirement<br>• Establishment of just transition funds to support workers and communities in fossil fuel-producing regions and promote economic diversification |
| **Enabling tools** | Social dialogue, consultation, and information programs | • Engagement with communities potentially affected by new fossil fuel extraction, existing extraction, or closure of assets.<br>• Commissioning of scientific reports | | • Social dialogue on the future of fossil fuel-extracting regions<br>• Establishment of a just transition commission, task force, or advisory panel<br>• Inventory of labour market information pertaining to fossil fuel workers<br>• Participatory budgeting |

| | Type of policy/ policy objective | Supply-side policies | Reducing the environmental impacts of the fossil fuel production sector | Diversifying the local economy while ensuring the transition is just and equitable |
|---|---|---|---|---|
| | International engagement | • Membership of the Beyond Oil and Gas Alliance (BOGA)<br>• Membership of the Coalition on Phasing Out Fossil Fuel Incentives Including Subsidies (COFFIS) | • Membership of the Subnational Methane Action Coalition | • Subnational platforms as a means to mobilize revenue for the transition |

Source: Authors' analysis.

## 3.1 Supply-Side Policies

### 3.1.1 Direct Tools: Financial

Under financial direct tools, one policy option is to put in place resource production taxes. The taxation of financial assets and capital income generated through fossil fuel production and extraction can prompt resource owners to extract resources more slowly and keep more in the ground (Rempel & Gupta, 2022). Taxation can also help internalize environmental externalities, including by removing "distortions created by subsidies, to reflect the full social cost of extraction activities" (Lazarus et al., 2015, p. 7). While many subnational governments do not have the legal authority to enact specific taxes, as this power typically lies with central governments, they have several tools to leverage or better manage the fiscal revenues from the fossil fuel industry in their jurisdictions (Bauer, 2013).

Taxes on fossil fuel extraction vary in form, mechanism, and use of funds raised, but typically function by taxing either profit from extraction or as a levy based on the carbon content of a project (Manley & Yanguas Parra, 2024). The funds raised from resource production taxes can potentially be used to finance green projects. For instance, Kentucky uses a coal severance tax imposed on its coal producers to fund economic regeneration and diversification initiatives (Bridle et al., 2017). Similarly, Espírito Santo (an oil-producing state in Brazil) has had an oil royalty-based fund in place since 2019 and launched a decarbonization fund in February 2026 that follows a blended finance model with nearly BRL 1 billion of public funds committed to finance the low-carbon economy in the state (Institute for Climate and Society, 2026; Netto, 2025). Another alternative, which has been traditionally used by national governments but is being proposed at the subnational level in jurisdictions like Alaska (Office of the Governor, 2026), is to impose windfall taxes targeted at increasing government intake during high price and revenue cycles (Manley & Yanguas Parra, 2024).

Another option is the reform or removal of production subsidies. Some subnational states and regions provide significant volumes of subsidies for fossil fuel extraction. States and provinces in Canada, the United States, and Australia alone provided a total of USD 3.4 billion in producer subsidies in 2023 (OECD, 2024). This means removal of subsidies can be a powerful tool. For instance, in 2022, British Columbia eliminated its Deep Well Royalty Program, which had provided USD 1.1 billion in fossil fuel production subsidies for deep horizontal drilling and hydraulic fracturing in 2022 alone (Government of British Columbia, 2022; OECD, n.d.). In 2007, North Rhine-Westphalia passed the Act on Financing the Termination of Subsidized Coal Mining, which put in place a gradual phase-out of subsidies for hard coal mining (Furnaro et al., 2021).

End-of-life and decommissioning requirements are critical tools in managing the environmental and financial liabilities of fossil fuel activities that can be passed on to the government. There are several different types of financial assurance mechanisms that can be used to ensure the costs of decommissioning are borne by the operator (The Commonwealth, 2022). One option is an orphan well levy, a levy issued to oil and gas extraction operators that is then used to pay for project closure costs. An example of this is in Alberta, which established an orphan well fund in the 1990s (Alberta Energy Regulator, 2024), although some questions

have been raised about the effectiveness of the fund (Bakx, 2025), as it became insolvent and required top-ups to cover the costs of cleanups (Corkal, 2020).

Large fossil fuel extraction projects have environmental impacts that go far beyond their closure (for example, water and soil acidity, etc.), which also need to be managed, and can end up becoming a burden for the local fiscal budgets and taxpayers, as illustrated in the Alberta example. This highlights the importance of adequate cost estimation and fiscal planning to make sure the polluter-pays principle is respected, and risks such as companies declaring bankruptcy are mitigated (Corkal, 2020).

Some regions have implemented innovative financial solutions to deal with those long-term impacts. For instance, the RAG-Stiftung (RAG Foundation) was established in the Ruhr region of Germany in 2007 to cover the perpetual environmental and safety liabilities (Ewigkeitsaufgaben) arising from German hard coal mining in the region. The foundation manages the purpose-built endowment capital allocation it received (now invested in shares and other investments), owns RAG AG as an operational vehicle, and uses investment income to fund long-term mine-water management, groundwater protection, environmental remediation, monitoring and selected regional development projects, thereby keeping those long-running costs off the public budget (RAG Foundation, n.d.).

Another illustrative example comes from the municipality of La Jagua de Ibirico (Cesar, Colombia), which historically has been dependent on fiscal revenues from coal mining. When a large mine closed unexpectedly and without adequate planning, the local government faced a sudden fiscal shortfall and was compelled to diversify its revenue base (Vega-Araújo et al., 2025). In response to the closure, the municipality introduced a mix of administrative reforms and capacity-building measures to strengthen tax collection and improve compliance (from taxes such as land and property taxes) (Vega-Araújo et al., 2025). This strategy can be effective as a short-term bridge solution for their solvency issues, but cannot replace the long-term need for reliable and stable new fiscal income sources.

### 3.1.2 Direct Tools: Regulatory

Subnational states and regions have a variety of policy options to regulate fossil fuel production. The most direct form of regulation is to prohibit or set limits on fossil fuel extraction or on particular kinds of extraction. For instance, New South Wales has put in place a ban on offshore petroleum drilling (New South Wales Government, 2024), while Quebec has prohibited all oil and gas exploration and extraction (Projet Meo-Climat, 2025). Several states and provinces have banned or placed moratoria on hydraulic fracturing (fracking), including Scotland (which now has a finalized policy position of no support for unconventional oil and gas), California, Washington State, New Brunswick, Nova Scotia,[3] New York, Maryland, Vermont, Tasmania, Wales, Paraná, Entre Ríos, and Santa Catarina (Fossil Free, 2019; Goldenberg, 2014; Government of New Brunswick, 2014; Governor Gavin Newsom, 2021; Maryland General Assembly, 2017; Nova Scotia, 2014; Senate Democrats, 2019; Sistema Argentino de Información Jurídica, 2017; Tasmanian Government, 2025; Llywodraeth Cymru, 2018; Paraná Governo do Estado, 2019; "Vermont first state," 2012).

[3] At the time of writing, this ban had recently been lifted (Gorman, 2025).

An intermediate step to banning all drilling can be ending new exploration or extraction licensing. Wales, Washington State, and Greenland have all ended such licensing (Cyfoeth Naturiol Cymru, 2023; Naalakkersuisut, 2021).

Another option can be adopting setbacks or protected zones. For instance, California has enacted a law to prevent new oil and gas drilling permits within 3,200 feet (975 metres) of homes, schools, playgrounds, parks, hospitals, and other "sensitive" spaces (Governor Gavin Newsom, 2022). As of October 2025, oil and gas companies have brought a lawsuit challenging that legislation, but no decision has yet been made (Earthjustice, 2025).

In terms of protected zones, Queensland has banned new oil and gas development in the Kati Thanda-Lake Eyre basin rivers and floodplains, an area of high ecological and cultural significance (Queensland Government, 2025). Similarly, states and regions can restrict leasing of government-owned lands and waters for fossil fuel development. For instance, New South Wales has heavily restricted the onshore areas in which gas drilling can take place (New South Wales Government, 2021).

Production ceilings and quotas are another option in the toolkits of states and regions. Such ceilings and quotas allow production activities to continue up to a certain level, but not beyond. They can be used either temporarily, to respond to market disruptions and protect industry from bottoming of prices for their products, or on a longer-term basis, using a cap-and-trade system for implementation.

For instance, in January 2019, Alberta introduced a temporary curtailment limit on crude oil production, capping production at 3.56 MMb/d, a reduction of about 8.7% of then-provincial production (Canada Energy Regulator, 2019). The curtailment limit was introduced in response to an atypically large and sustained difference in the price of Western Canadian and American crude oils, which was seriously undermining government resource revenue. After the introduction of the production limit, the price of Alberta oil rose dramatically and immediately, successfully narrowing the extreme price differential (Canada Energy Regulator, 2019). While the policy was successful in affecting prices, energy policy was a contentious issue during the 2019 election campaign, which the ruling party lost by a clear margin ("Alberta votes," 2019). This highlights the importance of political and societal buy-in for the duration of policies, which must survive several government change cycles to be truly effective.

Comprehensive emissions assessment in environmental impact review of new fossil fuel supply projects can be a powerful tool for subnationals that have jurisdiction over environmental impact assessment of fossil fuel extraction projects. There are no examples of subnationals adopting this approach at present. However, in 2025, the United Kingdom adopted new guidance requiring oil and gas companies to consider the environmental impacts of burning the extracted oil and gas in environmental impact assessments, providing an example that subnational governments can follow (Department for Energy Security & Net Zero, 2025).

Finally, for regions where extraction is already happening, an important regulatory area is the decommissioning of extraction-related projects (e.g., mines and wells) and infrastructure (e.g., railways, ports, etc.). For instance, in Alberta (Canada) the provincial energy regulator in addition to its licensee liability rating, enforces a strict liability management rating (Alberta Energy Regulator, 2025) and closure liability management framework, which includes a series

of mechanisms and requirements to improve reclamation efforts and better manage the clean up of oil and gas wells, pipelines and facilities (Government of Alberta, n.d.).

Similarly, Western Australia has regulated mine closure plans since 2011 under the Mining Act, requiring mine closure plans approved before mining starts, which include environmental rehabilitation, social impact mitigation, and post-mining land-use planning, and regulated financial contributions to the Mining Rehabilitation Fund that covers defaulting operators (Government of Western Australia, 2023).

### 3.1.3 Direct Tools: Provision of goods, services, and funds, or restriction thereof

Subnational governments can create funding or policy instruments designed to acquire production rights and compensate resource owners to leave fossil fuel reserves undeveloped or otherwise restrict their production. For example, when Quebec revoked exploration and production licences, it launched a compensation program for companies affected by the ban on exploration and production, with no deadline for claiming compensation (Projet MeO-Climat, 2025).

Subnational governments can also divest their public pension funds or investment funds from companies involved in fossil fuel production. So far, the Federal State of Bremen, Federal State of Berlin, and the Australian Capital Territory have taken this approach (Global Fossil Fuel Divestment Commitments Database, n.d.).

### 3.1.4 Enabling Tools

When looking to implement any of the above policies, it is important that subnational governments engage with communities potentially affected by new fossil fuel extraction, existing extraction, or the closure of assets. While engagement is usually limited to consultation with communities, much broader engagement tools and levels exist, such as active engagement in policy decision-making processes, as well as involving local communities in accountability and monitoring of implementation.

In nearly all the examples given above under "direct tools," extensive consultation has been carried out by subnational governments. For example, Quebec carried out a consultation period on its legislation to end hydrocarbon exploration and production (Projet MeO-Climat, 2025). Another example is that when ending new oil and gas developments in the Kati Thanda-Lake Eyre basin, the Queensland Government carried out a public consultation that sought feedback from "people who call the basin home or have a connection to its land, the businesses and industries which operate there and those who have a connection to or interest in the region" (Queensland Government, 2025).

Scotland carried out a 4-month-long consultation in 2017 on its policy position on unconventional oil and gas, which received 60,535 responses (Scottish Government, 2017). In addition, Scotland launched a call for evidence in 2022 and then carried out a consultation on its preferred policy position of no support for onshore conventional oil and gas in 2023 (Scottish Government, 2023).

A final example is that the coal-rich province of East Kalimantan has established a Regional Consultation Forum to Accelerate Economic Transformation of East Kalimantan, which includes local government, trade unions, companies, media, academia, and civil society organizations (Septania & Kuehl 2025). The Regional Consultation Forum is aimed at recommending just transition measures to policy-makers.

The commissioning of scientific reports is another important option when governments are considering adopting one of the direct tools mentioned above. Several interviewees mentioned the value of evidence-led approaches, i.e., seeking impartial and independent information, in formulating policy positions on transitioning away from fossil fuel production. As an illustrative example, in 2013, the Scottish Government convened an Independent Expert Scientific Panel to examine the evidence on unconventional oil and gas, including fracking, and coal-bed methane extraction (Scottish Government, 2014).

Scotland also commissioned a series of research projects on issues related to unconventional oil and gas-related activity, the reports of which were published in November 2016 (Scottish Government, n.d.-b). Another example is that Queensland, in the course of the process toward restricting new oil and gas development in Kati Thanda-Lake Eyre, commissioned three scientific reports to help inform decision making (Queensland Government, 2025).

An alternative to commissioning single reports is to create a government body or agency in charge of collecting, monitoring, and reporting on regional transition issues, both at the economic and social levels. For instance, in Asturias, a Just Transition Observatory was established for the dissemination, monitoring, and control of the evolution of the main strategies being developed in Asturias to face the transition away from coal in the region. The observatory is a public initiative, led by the Government of the Principality of Asturias in collaboration with different regional entities, but includes a wide range of stakeholders in its governance structure to promote citizen participation, including trade unions, universities, and other interest groups (Just Transition Observatory of Asturias, n.d.).

International engagement is another avenue that subnational governments can pursue. Such engagement provides them with opportunities to share lessons learned with peer governments and access support. The Under2 Coalition, the largest network of states and regions in the world, works toward facilitating this sort of engagement and bridging any capacity-building issues. For instance, the Under2 Coalition provides direct capacity-building support as seen in the U.K.–Brazil Green Pact project to mobilize green investment in Brazilian states (Under2 Coalition, n.d.-a), or via the Under2 Coalition's government-run Future Fund to support climate action in developing and emerging economy regions (Under2 Coalition, n.d.-b).

Quebec, California, Wales, Greenland, and Washington State are members of BOGA, an international alliance of governments and stakeholders working to facilitate the managed phase-out of oil and gas production, which offers a fund to support governments with technical assistance (BOGA, n.d.). Quebec co-chairs BOGA along with Denmark.

There is the upcoming first international conference on the just transition away from fossil fuels, which Colombia and the Netherlands launched at COP 30, with a clear invitation for subnational governments to attend. Subnational states and regions could also become members of the COFFIS, which is a coalition of governments working to remove fossil fuel

subsidies both collectively and through domestic action. So far, no subnationals have become COFFIS members, but the door is open.

**Table 2.** Subnational policies to curb the expansion of fossil fuel production

| Direct or enabling tools | Type of policies | Policies | Illustrative examples |
|---|---|---|---|
| Direct tools | Financial | Increase in resource production taxes, e.g., windfall taxes | Alaska (proposal) |
| | | Reform or removal of production subsidies | North Rhine-Westphalia, British Columbia |
| | | Orphan well levy | Alberta |
| | | Funds to manage the environmental impacts of production closure | Ruhr |
| | Regulatory | Ban on onshore or offshore oil and gas drilling | Northern Ireland (coal-bed methane extraction), New South Wales |
| | | Fracking moratorium | California, New Brunswick, Nova Scotia, New York, Maryland, Vermont, Tasmania, Wales, Paraná, Entre Ríos, Santa Catarina |
| | | No support for unconventional oil or gas | Scotland |
| | | No support for onshore conventional oil and gas | |
| | | End to new exploration or extraction licensing | Quebec, Wales, Washington State, Greenland |
| | | Setbacks and protected zones | California, Queensland |
| | | Comprehensive emissions assessment in environmental impact review of new fossil fuel supply projects | |

| Direct or enabling tools | Type of policies | Policies | Illustrative examples |
|---|---|---|---|
| | | Restrict leasing of state-owned lands and waters for fossil fuel development | New South Wales |
| | | Production ceilings and quotas | Alberta |
| | | Decommissioning regulations | Alberta, Western Australia |
| | Government provision of goods, services or funds, or the restriction thereof | Funding or policy instruments designed to acquire production rights and compensate resource owners to leave fossil fuel reserves undeveloped | Quebec |
| | | Divestment from companies involved in fossil fuel production | Federal State of Bremen, Federal State of Berlin, Australian Capital Territory |
| Enabling tools | Social dialogue, engagement, information programs | Engagement with communities potentially affected by new fossil fuel extraction, existing extraction, or closure of assets | Quebec, Queensland, Scotland, East Kalimantan |
| | | Commissioning scientific reports | Scotland, Queensland |
| | | Creation of a government agency in charge of monitoring and reporting on transition issues | Asturias |
| | International engagement | Co-Chair of BOGA | Quebec |
| | | BOGA membership | California, Wales, Greenland, Washington State |
| | | COFFIS membership | |

Source: Authors.

## 3.2 Policies to Reduce the Environmental Impacts of the Fossil Fuel Production Sector

### 3.2.1 Direct Tools: Financial

Industrial carbon pricing systems are an important option for reducing emissions in the fossil fuel production sector. There are several different types of industrial carbon pricing systems that subnational governments could establish. Cap-and-trade systems establish an upper limit of emissions and allow for trading of credits and allowances, while output-based systems are like cap-and-trade except the carbon price applies only to the portion of emissions that are above specific benchmarks. Tax-based systems typically apply an economy-wide tax on carbon use.

Twenty-five subnational governments have established industrial carbon pricing (United Nations Framework Convention on Climate Change, n.d.). For instance, Quebec has been successfully operating an economy-wide cap-and-trade system for greenhouse gas emissions since 2013. In 2014, Quebec linked its system to California's, "creating the largest carbon market in North America and the first to be designed and managed by subnational governments in different countries" (Climate High-Level Champions, n.d.). Industrial establishments, including refineries, aluminum smelters, cement plants, chemical plants, steel mills and mines emitting 25,000 metric tons of $CO_2$ equivalent or more annually are covered by the system. The system also covers electricity producers and importers, as well as all distributors of fossil fuels used in Quebec.

British Columbia established a near economy-wide carbon tax in 2008 (cancelled in 2025), covering approximately 80% of provincial greenhouse gas emissions (Government of British Columbia, 2025a). In 2024, British Columbia implemented an output-based pricing system for large industrial emitters, which includes flexible options such as earned units and carbon offsets to meet compliance obligations (Government of British Columbia, 2025b).

Another example is found in Mexico, where nine states have introduced green fiscal reform with carbon pricing elements: Colima, Guanajuato, Morelos, Querétaro, San Luis Potosi, State of Mexico, Tamaulipas, Yucatán, and Zacatecas (World Bank, n.d.-b). For instance, Querétaro's carbon pricing system applies to major emitting companies, defined as those that emit more than 25,000 tons of $CO_2$ per year (de la Garza, 2024).

Another financial instrument that can be used to reduce emissions in the fossil fuel production sector is the provision of subsidies or other incentives for decarbonizing production. The IEA estimates that around USD 75 billion of spending is required in 2030 to deploy all methane abatement measures in the oil and gas sector. While most measures should be financed by the industry itself, about USD 15–20 billion "may be challenging to mobilise without concessional financing or other means of support" (IEA, 2023b, p. 74).

No subnational states and regions appear to be currently pursuing such subsidies, but there is precedent at the national level. For example, the United Kingdom has a decarbonization allowance in the Energy Profits Levy, which gives an 80% investment allowance against the levy for qualifying expenditure on decarbonizing upstream oil and gas production (HM Revenue & Customs, 2023).

### 3.2.2 Direct Tools: Regulatory

A sector-specific carbon emissions cap for the oil and gas sector is one option that subnational governments could use to curb their emissions from oil and gas production. For example, in 2016, Alberta introduced an annual limit on oil sands greenhouse gas emissions, capping them at 100 megatonnes annually. Although the limit was passed via legislation in 2016, no regulation has been introduced under this legislation (Oil Sands Emission Limit Act, 2020).

Subnational states and regions could also put mandates in place for clean energy use and/or electrification. So far, it does not seem that any subnational government has required fossil fuel companies to electrify their operations. However, this is an area where some national governments have taken steps, and subnational governments can make further progress. For instance, the United Kingdom has put in place requirements for oil and gas operators to consider low-carbon power options in all new infrastructure design, with new developments from 2030 being either fully electrified or run on alternative low-carbon power (North Sea Transition Authority, 2024). Another possible mechanism is "green budgeting" and ensuring government investment is aligned with more sustainable practices.

Methane emissions regulations are another tool that states and regions can use, and in many cases are already using. Colorado, for example, requires methane emissions from oil and gas operations to be reduced 60% below 2005 levels by 2030 and mandates oil and gas companies to find and fix methane leaks (Climate XChange, 2025). California's comprehensive Oil and Gas Methane Regulation creates standards for oil and gas facilities, adopts leak detection and repair requirements, and mandates a process to be carried out if remote monitoring picks up a methane emissions plume at a given facility, among other things (California Air Resources Board, 2024).

Subnational governments can also deploy a range of hard power regulatory instruments to address the wider environmental impacts of fossil fuel extraction and processing, extending beyond greenhouse gas emissions to include water contamination, soil degradation, and air pollution. These can include stringent permitting requirements for drilling, mining, and processing operations; water-quality standards and discharge limits for effluents from extraction sites; and mandatory baseline and ongoing environmental monitoring of groundwater, surface water, and soil conditions.

Subnational authorities can also enforce air quality regulations, such as limits on particulate matter, sulfur dioxide, volatile organic compounds, etc. Finally, subnational jurisdictions could also introduce binding remediation and land-restoration obligations, requiring operators to treat polluted water, rehabilitate disturbed soils, and revegetate or stabilize sites during and after operations.

### 3.2.3 Enabling Tools

As with managing the transition away from fossil fuel production, in pursuing the policy objective of reducing emissions in the fossil fuel production sector, subnational governments also have the opportunity to engage internationally. For instance, states and regions could become members of the subnational equivalent of the Global Methane Pledge, the

Subnational Methane Action Coalition, a growing coalition of subnational governments who agree to take voluntary actions to contribute to a collective effort to reduce global methane emissions at least 30% from 2020 levels by 2030. Nearly 30 states and regions from around the world are already part of this initiative and are sharing best practices on reducing methane emissions (Subnational Methane Action Coalition Methane [SMAC], n.d.).

Governments could also endorse the World Bank's Zero Routine Flaring by 2030 Initiative. So far, California, Colorado, and Western Australia have done so (World Bank, n.d.-a).

**Table 3.** Subnational policies to reduce emissions from the fossil fuel production sector

| Direct or enabling tools | Type of policies | Policies | Examples |
|---|---|---|---|
| Direct tools | Financial | Industrial carbon pricing systems | 25, including British Columbia, Alberta, Quebec, Northwest Territories, California, Querétaro |
| | | Subsidies or public finance for decarbonization of production | |
| | Regulatory | Sector-specific carbon emissions cap | Alberta |
| | | Mandates for clean energy use and electrification | |
| | | Stringent environmental permitting requirements and regulations for soil, water, and air quality | |
| | | Methane emissions regulations | Alaska, California, Colorado, Louisiana, Alberta, Maryland, Massachusetts, New Mexico, New York, Pennsylvania, Saskatchewan, British Columbia |
| | | Binding remediation and land-restoration obligations | |
| Enabling tools | International engagement | Membership of the SMAC | 27 members (SMAC Methane, n.d.) |
| | | Endorsement of the World Bank's Zero Routine Flaring by 2030 Initiative | California, Colorado, Western Australia |

Source: Authors.

## 3.3 Policies to Diversify the Economy While Pursuing a Just and Equitable Transition

Subnational governments are increasingly at the forefront of just transition implementation—the complex process of managing the social, economic, and environmental shifts associated with the phase-down of fossil fuel industries. State and regional governments have a pivotal role in this regard in terms of visioning, setting regulations, allocating funds, and managing programs. This can be a challenging task. Transitioning away from extractive industries requires decades of investment in fields such as education and transport infrastructure, building regional visions for development, allocating funding to development programs, and supporting small and medium-sized enterprises, among other areas.

State and region governments often use their proximity to affected communities and industries to align economic diversification efforts, mine or plant closure management, and social protection mechanisms within a coherent transition strategy. As a result, many of the instruments described earlier in this report, such as decommissioning requirements, already function as de facto components of broader just transition frameworks.

However, comprehensive economic diversification and just transition frameworks are the exception rather than the rule, and many policies are related to an equitable transition or economic diversification but are still not articulated under formalized holistic frameworks/roadmaps/strategies. For example, in the Jiu Valley (Romania), the government offered tax breaks to companies willing to open businesses in regions disadvantaged by the decline of the coal sector (Toc & Alexandrescu, 2022). However, the breaks were insufficient to overcome other obstacles, such as a lack of connectivity, infrastructure, and a skilled labour force, resulting in minimal or no private investment in the area (Toc & Alexandrescu, 2022).

There is evidence that more complex regional transition policy packages are more appropriate for tackling subnational dependency, but they usually present implementation challenges in terms of policy coordination with broader national or subnational regulations (Yanguas Parra et al., 2025). Limited institutional capacity at the subnational level, which is more acute in low- and middle-income countries or regions, is a significant challenge to setting up and implementing such comprehensive frameworks.

Such disarticulation of policies can lead to counterproductive outcomes. For instance, given the strong expertise and skills in the fossil fuel sector that fossil fuel-dependent regions have, their economic and fiscal diversification strategies could gravitate naturally toward downstream activities related to the fossil fuel sector (See Box 2). While these sectors may provide short-term economic gains, they risk locking regions into carbon-intensive development trajectories and ultimately increasing both emissions and economic vulnerability, undermining just transition objectives by, for instance, increasing the local environmental impacts of fossil fuels and the share of regional jobs dependent on the fossil fuel industry.

### Box 2. The challenge of green economic diversification in fossil fuel-dependent regions

There are still relatively few examples of economic diversification strategies in fossil fuel-dependent regions that explicitly target green or low-carbon sectors, in part because this represents a relatively recent shift in policy thinking. Historically, diversification efforts have tended to follow existing patterns of industrial clustering and comparative advantage, meaning that many regions have sought to expand into activities closely related to fossil fuel value chains—such as refining, petrochemicals, or other energy-intensive industries (Peszko et al., 2020). Fossil fuel-dependent economies are often deeply embedded in carbon-intensive infrastructure, value chains, and skills, making it more straightforward in the short term to diversify within these existing systems. At the same time, there is a growing recognition among subnational governments that such approaches may not be viable in the long term.

As global demand for fossil fuels declines and low-carbon technologies expand, there is increasing interest in forward-looking diversification strategies that align with emerging economic opportunities, including renewable energy, clean manufacturing, and services. However, moving into entirely new sectors—particularly low-carbon or knowledge-intensive industries—is inherently more challenging. It requires the development of new capabilities, skills, institutions, and infrastructure, often over long time horizons and amid significant uncertainty about future technologies, markets, and comparative advantages.

Moreover, the scale and nature of these opportunities often extend beyond subnational boundaries, as many low-carbon industries are embedded in regional, national, or global value chains. This underscores the importance of strong coordination with national governments, particularly in areas such as industrial policy, infrastructure development, trade integration, and skills development. Without such coordination, subnational efforts to diversify into new sectors risk being constrained by limited market access, fragmented value chains, or insufficient enabling conditions.

## 3.3.1 Direct Tools: Regulatory

Measures to promote economic diversification in their jurisdictions are among the regulatory instruments subnational governments can use to manage the ongoing or eventual decline of fossil fuel extraction activities in a just and orderly manner. Those could include royalties earmarking and green industrial strategies, among others. For instance, since 2012, Queensland has allocated a portion of coal and gas royalties to the Royalties for the Regions fund, which co-finances infrastructure and economic diversification in mining-dependent communities (e.g., roads, digital connectivity, tourism infrastructure) (Drysdale et al., 2014; Queensland Government, n.d.). Focusing economic and fiscal diversification on low-carbon and forward-looking sectors that support long-term resilience and alignment with climate objectives is the best way to ensure that diversification efforts contribute to a structural transformation of regional economies, rather than a reconfiguration of fossil fuel dependence.

Another example is that of the State of Rio de Janeiro, whose offshore production accounts for a majority of Brazil's total oil output. It has enacted specific regulations to increase the economic benefits of the offshore energy-related projects (both in the oil and gas sector and the renewable energy sector) in the region that build on the federal regulations for minimum local content requirements. Those include state support for training, research and technological innovation initiatives aimed at the renewable energy sector, and promotion of the inclusion of small and medium-sized local businesses in the offshore energy production chain (Schioldan, 2025).

### 3.3.2 Direct Tools: Government provision of goods, services, or funds

One important option is to establish funds for just transition and/or economic diversification projects and programs. For example, New South Wales will soon launch a Future Jobs and Investment Fund, which will invest AUD 22.5 million (USD 14.6 million) per year for 4 years into coal-producing regions (New South Wales Government, 2025). The Fund will work in tandem with a Future Jobs and Investment Authority, which will help guide the future economic development of New South Wales's four coal mining regions from coal production toward other economic opportunities (New South Wales Government, 2025). The Future Jobs and Investment Authority will "develop a framework to allow the funding to be spent on projects like infrastructure and post-mining land use planning, skills mapping, feasibility assessments and training programs" (New South Wales Government, 2025).

Another example is that the Scottish Government has launched a Just Transition Fund that will invest GBP 500 million (USD 672 million) over 10 years into projects that contribute to the region's transition to net-zero and align with just transition goals (Scottish Government, 2025a). In addition, in 2025, the Scottish Government allocated GBP 25 million for a Grangemouth Just Transition Fund, which, in the wake of the closure of the refinery at Grangemouth, is intended to support industry, the workforce, and community throughout the transition period (Scottish Government, 2025d).

Similarly, subnational governments can create funding schemes or policies for investment in the social and economic infrastructure of the region, which reduces the region's dependency on the local fossil fuel industry. For instance, in Victoria (Australia), the Regional Economic Transition Agency was created to help regions experiencing change and transition from traditional industries like the fossil fuel industry (Regional Development Victoria, n.d.). A flagship example of the work of this agency is the Latrobe Valley Economic Transition plan, which sets out a strategy to shift the region's economy away from its historical industries like coal toward new and sustainable sectors, focusing on diversifying its economic base (Cain, 2019). Another example comes from Chhattisgarh, a leading coal-producing state in India, where, through the PM Janman yojana scheme, the state government aims to provide basic facilities like safe housing, clean drinking water, and improved access to education, electrification, health facilities, road connectivity, and telecom activities to Particularly Vulnerable Tribal Groups communities (Rahman et al., 2025).

A complementary option is to establish financial assistance programs for workers to find re-employment, relocate, retrain, or provide a bridge to retirement. For instance, the Alberta

Coal Workforce Transition Program provides coal generation and mining workers with financial assistance for re-employment, retirement, relocation, and education (Government of Alberta, n.d.). The Scottish and British governments have taken the joint initiative to establish the Oil and Gas Transition Training Fund, which offers financial help for workers in the oil and gas sector to reskill and upskill for careers in clean energy (Scottish Government, 2025b).

The region of Mpumalanga (in South Africa) is an example that combines several aspects of just transition. It is building a provincial Green Economy/Just Transition delivery architecture, with flagship initiatives like the Mpumalanga Green Economy Development Plan (MGEDP) and the Mpumalanga Green Cluster Agency (MGCA) (Just Energy Transition, n.d.). The MGEDP lays the regional strategy to pivot from a coal-dependent economy toward renewables, green manufacturing, water/land restoration and services (Department of Economic Development and Tourism, 2025). The MGCA is a provincial delivery/implementation body created to incubate green small and medium-sized enterprises, package projects, provide market intelligence, and serve as a one-stop secretariat for the province's just energy transition (MGCA, n.d.).

One criticism of these types of programs is that they often do not address the informal economies linked to extractive activities. Many fossil fuel-dependent regions in the Global South are characterized by high levels of informal economic activity (Bhat & Thakur, 2025; Furnaro & Yanguas Parra, 2022). Plans and programs should go beyond a narrow focus on formal workers and explicitly consider marginalized groups whose livelihoods depend on informal and non-formalized services connected to extractive sectors, while also taking a gender perspective (Banerjee, 2023). Targeted support for informal sector activities and workers could include support for micro-enterprises, incentives for getting formalized, de-criminalization of certain activities, e.g., sex work, which is common around fossil fuel extraction areas (Carney & Gushulak, 2016; Lahiri-Dutt, 2022), or rural development programs that allow vulnerable populations to have access to land.

### 3.3.3 Enabling Tools

The establishment of an independent multistakeholder body to provide scrutiny and advice on how to conduct a just transition can assist in ensuring that just transition policies are evidence-backed and co-designed with key stakeholders and broader society. For instance, Scotland has established the Just Transition Commission, which is tasked with providing advice and recommendations on ongoing transition planning led by the Scottish Government, while undertaking meaningful engagement with those most likely to be impacted by the transition (Just Transition Commission, n.d.).

Another example is the Task Force on Sustainable Just Transition established by the Government of Jharkhand, which is mandated to assess and recommend various steps to the state government for transitioning to a non-fossil-fuel-based economy (Government of Jharkhand, n.d.).

Similarly, but on a shorter-term basis, Alberta in 2015 established the Advisory Panel on Coal Communities, tasked with examining the potential effect of the retirements of coal-fired generation plants and associated mining operations on communities and workers, and

identifying strategies to support worker transition (Government of Alberta, 2017). The panel released its report in 2017 (Advisory Panel on Coal Communities, 2017).

**Table 4.** Subnational policies to diversify the economy while ensuring that the transition is just and equitable

| Direct or enabling tools | Type of policies | Policies | Examples |
|---|---|---|---|
| Direct tools | Financial | Taxes earmarked for supporting local communities and economic diversification | Kentucky |
| | | Tax breaks for new industries | Jiu Valley (Romania) |
| | | Sovereign funds targeted at financing transition investments | Espírito Santo |
| | Regulatory | Royalties earmarked for economic diversification | Queensland |
| | | Local content requirements | Rio de Janeiro |
| | | Green development strategies | Mpumalanga |
| | | Targeted support for informal sector activities and workers | To a limited extent, Mpumalanga |
| | Government provision of goods, services, or funds, or the restriction thereof | Financial assistance for workers to find re-employment, relocate, retrain, or provide a bridge to retirement | Alberta, Scotland |
| | | Establishment of just transition funds to support workers and communities in fossil fuel-producing regions | New South Wales, Scotland |
| | | Funding for social and economic infrastructure for economic diversification | Victoria<br>Chhattisgarh |
| Enabling tools | Social dialogue, engagement, information programs | Establishment of a just transition commission, task force, or advisory panel | Scotland, Jharkhand, Alberta |

| Direct or enabling tools | Type of policies | Policies | Examples |
|---|---|---|---|
| | | Support for the development of tools to support fossil fuel workers in their transition to non-fossil industries (e.g., the industry-led Energy Skills Passport of Scotland), which allows oil and gas workers to identify training routes into key offshore wind roles) | Scotland |
| | | Participatory budgeting | Scotland |
| | International engagement | Membership of subnationals in Under2, Powering Past Coal Alliance, BOGA, COFFIS, endorsements of the Fossil Fuel Treaty Initiative and other initiatives | See members and endorser for each initiative separately |

Source: Authors.

Participatory budgeting is another tool that can be used. Participatory budgeting is when communities are directly involved in deciding how funds are spent in their area. For example, Scotland's Just Transition Fund includes a Just Transition Participatory Budgeting Fund, introduced in 2022 to empower residents in Aberdeen, Aberdeenshire, and Moray (major oil-producing regions) to shape the region's transition to net-zero (Scottish Government, 2025c). In the first 2 years of the Fund, over 29,000 people voted to distribute the GBP 2.5 million capital funding to 98 successful projects.

Information programs can also assist. One example is the establishment of a detailed and publicly available inventory with labour market information pertaining to fossil fuel workers, such as skills profiles, demographics, locations, and employers. This would serve as a baseline of labour market information and enable workers to connect with potential new employment opportunities and make informed decisions about retraining (Scottish Government, 2020). The Scottish Government has supported the development of an Energy Skills Passport, with GBP 3.7 million (USD 4.9 million) in funding (Energy Skills Passport, n.d.; Scottish Government, n.d.-a). The industry-led Energy Skills Passport supports oil and gas workers to identify training routes into several key offshore wind roles.

Regarding international engagement, one option for subnational states and regions in the Global South is to establish subnational platforms. These would be like country platforms, which are voluntary, country-led mechanisms designed to bring together myriad sources of finance and foster collaboration among development partners at the country level, based on a shared strategic vision and priorities (Robinson & Olver, 2025), except they would be at

the subnational level. The growing proliferation of subnational development banks, especially in Latin America and Africa, is something to monitor in this regard. Just Energy Transition Partnerships have been launched with South Africa, Indonesia, Vietnam, and Senegal (Kramer, 2022), but there are no examples yet of similar platforms at the state or regional level, although the South African Just Energy Transition Partnership has included subnational governments in its national commission.

## 3.4 Subnational Roadmaps to Transition Away From Fossil Fuel Production in a Just, Orderly, and Equitable Manner

Subnational states and regions, therefore, have a wide range of policy options available to them to transition away from fossil fuel production in a just, orderly, and equitable manner, taking into account the three policy objectives canvassed above.

For subnational governments that are willing and able to act as early movers, there is a clear opportunity to begin implementing concrete measures now—testing policy approaches, building institutional capacity, and positioning their economies to benefit from emerging low-carbon industries. Early action can help reduce transition risks, attract investment, and establish these regions as leaders in shaping viable pathways away from fossil fuel dependence.

Although not essential, ideally, an overarching structure, such as a subnational roadmap, plan, or strategy, would exist to proactively integrate various policies into a realistic and ambitious long-term package. Such a package would balance both the economic opportunities of electrification and clean technologies with any just transition and economic diversification considerations that come from moving away from fossil fuels.

Such roadmaps should be (Picciariello et al., 2026):

1. **time-bound**. Roadmaps should contain time-bound targets or objectives for transitioning away from fossil fuel production, with intermediate milestones. For instance, a roadmap could contain timelines to completely phase out production of the fossil fuels that are produced in the subnational state or region, with intermediate milestones such as ending new exploration licences and introducing emissions mitigation measures.
2. **sequenced**. Roadmaps should contain a prioritization or sequencing of the types of fuel production to be phased out. For instance, it may be sensible to phase out coal production first, since it is the most polluting fossil fuel. On the other hand, a state or region may wish to first phase out the type of fuel production that the government is least reliant on for revenue. Another type of sequencing may exist between the types of measures to be pursued. For instance, depending on the context, it may make sense to apply financial measures first, such as removing fossil fuel subsidies, before taking a regulatory approach.
3. **financed**. Roadmaps should identify clear financing/investment pathways to implement the policies and measures they contain. In the case of subnational governments in the Global South, they may also identify financing needs and investment opportunities for donor governments. An example of this is Odisha State's

State Action Plan on Climate Change, which estimated the amount of finance needed to implement climate actions over 5 years (Dubash & Jogesh, 2014).

4. **intersectional**. Roadmaps should account for gender, race, and social equality. For instance, women are disproportionately represented in jobs supporting fossil fuel workers, such as accommodation and food services, while men are disproportionately represented among fossil fuel workers themselves; women are thus often not covered by worker compensation and retraining policies (Piggot et al, 2019). A roadmap that does not address such realities risks an unjust transition.
5. **whole-of-government**. A roadmap should be owned by the whole government, not only one department or agency, meaning there is maximum buy-in from across ministries or their subnational equivalent (secretariats, departments, agencies, etc.).
6. **whole-of-society**. In developing roadmaps, subnational governments should consult extensively with relevant stakeholders. Roadmaps should be formulated, implemented, and evaluated in close collaboration with workers, employers, unions, municipalities, environmental organizations, and economic development organizations. States and regions can leverage their ability to work with cities or municipalities at scale, taking a more granular approach to a roadmap's design compared to a national government.

A dedicated task force or committee would ideally be convened to develop such a roadmap. Task forces should have a mandate to engage with those affected by the transition away from fossil fuel production, collect information on the effects of transition, and identify possible solutions to support economic diversification and a just transition.

Task forces should be composed of a range of members from varied backgrounds, including labour, industry, environmental groups, and national and subnational government. Several interviewees highlighted that key champions behind policies to transition away from fossil fuel production have included industry leaders and trade unions, as well as local community leaders and stakeholders. This underscores the importance of including representatives from these groups in roadmap task forces.

# 4.0
# Challenges to, and Opportunities for, Transitioning Away From Fossil Fuel Production

Each type of subnational state or region (following the categories we have used in this report) faces key challenges to the transition and has corresponding policy options at its disposal (see Table 5). At every level, however, there are certain enabling conditions for success. One is a strong policy mandate, such as a legally binding net-zero emissions target and/or a climate strategy at the state/regional level. Insights from the Under2 Coalition inform us that at the end of 2025, all 183 governments in the coalition have a net-zero target of 2050 at the latest. Of those 183 governments, 73% of them have a Subnational Transition Plan designed to tackle mitigation, adaptation, and/or energy-related issues (Climate Group, n.d.).

Strong political leadership—a consistent commitment to credible climate action, advocacy, and accountability—is another key enabling condition. For subnational governments ready to lead, this includes translating commitments into clear policy direction, coordinating across levels of government, and actively engaging stakeholders to build trust and maintain momentum. Early and visible leadership can help shape expectations, mobilize investment, and demonstrate that a managed transition away from fossil fuels is both feasible and beneficial at the regional level.

A third enabler of success is a community-centred approach coupled with transparent communication, which builds trust and ensures policies reflect local needs. This requires actively engaging and supporting vulnerable and often underrepresented groups (e.g., women, youth, Indigenous communities, and informal workers). Ensuring their meaningful participation and access to opportunities, social protection, and decision-making processes is essential to avoid deepening or reproducing existing inequalities (Brisbois et al., 2024) and to build broad-based support for a just and durable transition.

It is critical to note that subnational governments differ markedly across countries in terms of their legal authority, fiscal autonomy, and institutional capacity, and these differences are particularly pronounced between the Global North and the Global South. While many of the examples in this report draw from the Global North, where subnational entities often have stronger regulatory powers and more robust administrative structures, we explicitly recognize that subnational governments in low- and middle-income countries frequently operate with more limited mandates, constrained financial resources, and weaker institutional capacity. These constraints can affect their ability to design, implement, and enforce some of the policy measures discussed, including complex regulatory reforms or large-scale investment programs, and there is a need for more detailed research on how Global South regions can move forward despite their limited capacities.

Nevertheless, the analysis remains relevant for Global South contexts because many tools, such as strategic planning, community engagement, coordination with national agencies, improved tax administration, or smaller-scale environmental and social programs, are still within the reach of regions with limited capacities. Moreover, understanding the broader suite of subnational measures implemented elsewhere can help inform priority-setting, guide capacity-building efforts, and support advocacy for stronger national frameworks and international financial support.

**Table 5.** Typology of subnational states and regions, with key challenges and policy options

| Type of region | Key challenges to the transition | Policy options | Examples |
|---|---|---|---|
| No fossil fuel production, no known significant reserves | New exploration activities<br>Industry pushback, legal challenges<br>Closure and rehabilitation of abandoned wells<br>Coordinating multiple stakeholders across sectors and regions | • No new licensing policy<br>• Moratorium on exploration and extraction<br>• Stringent environmental permitting requirements and regulations for soil, water, and air quality<br>• Protection of natural areas<br>• End-of-life and decommissioning requirements | Quebec, Entre Ríos, Paraná |
| No or marginal fossil fuel production, significant reserves discovered | All of the above, plus push for new fossil fuel extraction projects | *All the above, plus:*<br>• Social dialogue on the future of the region<br>• Engagement with communities potentially affected by new developments<br>• Evidence-based policy-making (commissioning of scientific reports, etc.)<br>• Strong environmental and social licensing requirements | Scotland (in terms of onshore conventional oil and gas, unconventional oil and gas)<br>Rio Grande do Norte – Brazil (Potiguar Basin—Equatorial Margin) |

| Type of region | Key challenges to the transition | Policy options | Examples |
|---|---|---|---|
| Fossil fuel production, but in structural decline | All of the above, plus management of challenges of production decline (historic dependence on the fossil fuel sector, employment reduction, outward migration, increased social needs, decreasing fiscal intake, etc.) | *All the above, plus:*<br>• Just transition policies to support workers and communities<br>• Measures to reduce emissions in the fossil fuel production sector<br>• Setbacks and protected areas<br>• Pursue supply-side policy in conjunction with demand-side policy<br>• Funding and regulations to diversify the regional economy away from fossil fuel production (e.g., Green industrial strategies or sovereign transition funds)<br>• Targeted support for informal sector activities and workers. | California, Scotland (offshore)<br>Kentucky<br>Mpumalanga<br>El Cesar<br>Jiu Valley (Romania) |
| | Lack of trust from communities reliant on the fossil fuel sector | | |
| | Skills gaps and workforce transition | | |
| | Pushback from neighbouring states and regions that rely on a subnational's fossil fuel production | | |
| | Federal government pushback | | |
| | High emissions from fossil fuel production operations | | |
| Fossil fuel production stable or increasing, with considerable reserves existing | All of the above, plus lack of immediate incentive to transition away from fossil fuel production | All of the above, plus studies on how declining fossil fuel demand will impact production | Texas, Alberta, Jharkhand, Neuquén, Espírito Santo |

Source: Authors.

## 4.1 No Fossil Fuel Production and No Significant Reserves

Governments with no fossil fuel production face significant hurdles to adopting supply-side climate policy, even if they do not have significant reserves. For example, some of the governments we interviewed mentioned pushback from the oil and gas industry as a key barrier to the implementation of policies to manage a transition away from fossil fuel production, even if no significant fossil fuel reserves had been discovered in their jurisdiction.

In Quebec, for example, which had zero production of oil and gas before it passed legislation to end oil and gas licensing and revoke existing licences. Eleven companies have joined forces to sue the government for a value of CAD 18 billion (USD 12.8 billion) (Projet MeO-Climat, 2025). Such legal proceedings generate significant costs for the subnational government and can potentially jeopardize the adoption of policies to transition away from production.

The closure and rehabilitation of abandoned oil and gas wells and coal mines is also a challenge, even if governments do not have any fossil fuel production. This is a complex, lengthy, and costly process. Even in Quebec, 907 oil and gas wells had been opened under exploration licences as of 2024 despite there being no production (Ministère de l'Économie, de l'Innovation et de l'Énergie, 2024). Of these, 92 were considered problematic due to environmental or safety risks, while 228 had not been located and thus could not be assessed for danger to health and environment (Ministère de l'Économie, de l'Innovation et de l'Énergie, 2024).

Coordinating multiple stakeholders across sectors and regions was another commonly mentioned challenge. Relevant stakeholders include national, regional, and local governments, community organizations, industry players, labour unions, and environmental groups. Ways to overcome this challenge include establishing clear leadership roles (such as ministers responsible for just transition) and establishing collaborative partnerships that ensure alignment of goals and resource sharing.

## 4.2 No Fossil Fuel Production and Significant Reserves

Governments with significant reserves, but no fossil fuel production, face all of the challenges mentioned above. However, industry pressure to start oil and gas production is much stronger than in regions with no significant reserves. Due to these factors, it is much more important to garner popular support for measures to constrain fossil fuel production.

In this scenario, subnational governments should prioritize social dialogue on the future of the region and engagement with communities potentially affected by new developments, as well as evidence-based policy-making through commissioning scientific reports. Seizing the benefits of electrification, declining renewable energy costs, and other clean energy technologies is also paramount here. As the International Renewable Energy Agency (2025) shows, with 585 GW of capacity additions, renewables accounted for over 90% of total power expansion globally in 2024.

## 4.3 Fossil Fuel Production in Decline

Subnational governments with fossil fuel production in decline face several challenges not faced by those with no fossil fuel production. **Historical economic dependence on the fossil fuel sector** can make it difficult to quickly redirect investment and jobs toward green industries. One way to address this is through a just transition fund that strategically focuses funding on projects that diversify the local economy, supporting new low-carbon sectors and innovation (as discussed in Section 3.3).

One key implication of the transition is **reduced employment in the fossil fuel sector**, which needs to be overcome via targeted just transition support measures as covered in Section 3.3. In many fossil fuel-dependent regions, particularly in the Global South, a significant share of livelihoods is tied to the **informal economy**, yet these workers are often overlooked in transition planning. Targeted support for informal sector activities and workers will be needed to ensure a just transition. Emerging policy frameworks for **skills development and social protection**, such as those discussed in Section 3.3 can be informative, although such approaches remain at an early stage of implementation.

A further impact is **declining fiscal intake, including loss of tax revenues to local councils and municipalities**, who rely on the fossil fuel sector for income. The solution to this needs to incorporate medium- and long-term planning for economic diversification in these local areas, including measures such as those mentioned in Section 3. In addition, in many countries, the solution could include implementing strategies to increase local tax collection. Here, focusing economic and fiscal diversification efforts on activities that reduce reliance on fossil fuels, rather than reinforcing it through downstream or energy-intensive activities such as refining, petrochemicals, carbon capture and storage, or fossil fuel-based power and heavy industry, is critical to avoid increasing the economic linkages of the fossil fuels sector.

Interviewees also highlighted the **risks associated with higher energy prices for consumers**, such as petroleum prices at the pump. To overcome this hurdle, supply-side measures to transition away from production need to be well timed in tandem with demand-side measures to increase efficiency, reduce demand, and pursue electrification. Supply-side policies should, in most cases, also be implemented when oil prices are low. Measures can also be adopted to support consumers in other ways, such as shifting support to renewable energy and energy efficiency, alongside cash transfer programs or other investments in social protection (Sanchez et al., 2020).

**Pushback from neighbouring states or regions** that rely on a given subnational's fossil fuel production to supply their own demand can also be a barrier to the implementation of policies to transition away from fossil fuel production. Such neighbouring states and regions should be treated as key stakeholders in the formulation of subnational-level roadmaps to transition away from fossil fuel production (see Section 3.4) from the outset.

Another key transition dynamic concerns the **skills gaps and workforce transition**. Some interviewees reported that workers in fossil fuel extraction sectors sometimes lack the specific skills or formal qualifications and certificates needed for green jobs, despite the high transferability of their experience and expertise to adjacent energy sectors. To overcome this challenge, it is essential for states and regions to invest in targeted skills development and training programs in partnership with industry and trade unions, enabling workers to move into new roles in renewable energy, sustainable technologies, and other emerging sectors.

Governments must also contend with **high emissions from fossil fuel extraction operations**, which can raise a barrier to meeting net-zero goals and interim emissions-reduction milestones. Addressing this requires the implementation of policies such as those outlined in Section 3.2.

In many countries, **close ties between the fossil fuel sector and government** further complicate the transition. Going beyond mere industry pressure, in some cases, politicians are directly linked to extractive industries, for example, relying on them to fund campaigns. Such vested interests can significantly constrain efforts to transition away from fossil fuel production. For instance, economic diversification policies and other types of support could gravitate naturally toward downstream activities related to the fossil fuel sector (Peszko et al., 2020), which could provide short-term economic gains, but they risk locking regions into carbon-intensive development trajectories and ultimately increasing both emissions and economic vulnerability.

Finally, **levels of trust between governments and affected communities often remain low**. As the fossil fuel extraction sector contracts, one challenge highlighted by our interviewees was that affected communities are worried about job losses and economic decline. Ensuring their needs are addressed is critical to successfully adopting and implementing policies to transition away from fossil fuel production in a just, orderly, and equitable manner.

Failure to do so can result in political backlash against climate policies in general, not just on supply-side policies. Transparent communication, consultation prior to policy adoption, and an evidence-based approach (for example, the commissioning of scientific reports) can assist with this issue. Participatory budgeting can also help, allowing communities to have direct input on how funds (for example, just transition funds) are spent, increasing local ownership and trust.

## 4.4 Stable or Increasing Fossil Fuel Production

Governments with stable or increasing fossil fuel production face some of the same challenges to transitioning away as governments with fossil fuel production in decline. They too face the loss of tax revenues to local governments, potentially increased energy prices for consumers, a skills gap and workforce transition, a lack of trust from affected communities, and pushback from neighbouring states or regions.

In general, regions with stable or increasing fossil fuel production have even more entrenched fossil fuel industries than those with declining production, creating conditions that are very challenging for transitioning away from production. In addition, because they have not yet faced the challenges that come with production in structural decline, such as declining revenues and workforces, there can often be **no immediate incentive to transition away from fossil fuel production**. If there is a stable revenue stream, in other words, there is no apparent reason to transition away. However, this also represents a critical window of opportunity: continued revenues from the fossil fuel industry can be strategically leveraged to begin preparing for an eventual transition, rather than reinforcing long-term dependence.

Moreover, this view risks being short-sighted. Governments with stable or increasing fossil fuel production should take a longer-term view and conduct studies on how eroding fossil fuel demand worldwide will affect them in future. For instance, research from the Carbon Tracker Initiative shows how the energy transition could affect the government revenues of oil- and gas-dependent Canadian provinces, due to lower oil and gas demand (Collett-White & Prince,

2025). Economic diversification measures also come to the fore, as these governments often have more money to invest in diversification than those with production already in decline. By proactively directing a share of current fossil fuel revenues toward economic diversification, workforce reskilling, and social protection systems, subnational governments can smooth adjustment processes, reduce future economic shocks, and enable a more orderly and better-managed transition. Early planning and investment can help ensure that when production eventually declines, regions are better prepared with alternative sources of growth and stronger social resilience already in place.

# 5.0 Conclusion and Recommendations

Many subnational states and regions are already doing a lot to manage the transition away from fossil fuel production in a just, orderly, and equitable manner or, in the case of states and regions that do not have active production, not to start production. Subnational states and regions are clear drivers of the energy transition alongside national governments.

All subnational states and regions in which fossil fuels are produced or where there are reserves or exploration have many tools at their disposal for a just, orderly, and equitable transition, as canvassed in Section 3. For subnational governments that are willing and able to act as early movers, there is a clear opportunity to begin implementing concrete measures now—testing policy approaches, building institutional capacity, and positioning their economies to benefit from emerging low-carbon industries. Early action can help reduce transition risks, attract investment, and establish these regions as leaders in transitioning away from fossil fuels.

However, there is no one-size-fits-all package, especially given the range of hard and soft powers across states and regions. State and regional governments need to assess the situation, consult, and decide what is best for their unique circumstances. Policy instruments and mixes should aim for a balance between coherence of the policy with its stated policy goals, sufficient implementation means, and coordination with broader subnational and national policy.

States and regions also face several challenges to the transition, as seen in Section 4, depending on their status regarding production and reserves. The transition faces a range of potential political, economic, social, and technical constraints. These include industry and political resistance, coordination across stakeholders and jurisdictions, economic and fiscal dependence on fossil fuels, workforce and skills impacts, emissions and infrastructure legacies, consumer price pressures, and low levels of trust among affected communities. The policy options identified in Section 3 can help address many of these challenges. At all levels, there are certain enabling conditions for success, including a strong policy mandate at the state/regional level, strong political leadership, good alignment with national policies, and a community-centred approach coupled with transparent communication.

Subnational states and regions can actively manage the transition away from fossil fuels in a just, orderly, and equitable manner. If this opportunity is not taken up, states and regions face the risks of a disorderly, unmanaged transition where fossil fuel demand falls faster than supply, leading to negative impacts on workers, communities, government revenues, and the entire subnational economy. The current context of geopolitical instability and heightened volatility in international commodity markets (particularly oil and gas) exposes the trade and fiscal vulnerability of fossil fuel-dependent regions and reinforces the case for building more resilient and diversified economic systems. If strategically managed, the potential revenues derived from the high-price cycle in international fossil fuel markets present a critical opportunity to invest in economic diversification, workforce transition, and social protection measures, thereby strengthening long-term resilience.

**Figure 1.** Challenges faced by subnational governments, and policy options available

| REGIONS WITH ↓ | CHALLENGES | POLICY OPTIONS |
|---|---|---|
| No or marginal fossil fuel production<br>No known significant reserves | New exploration activities<br>Industry pushback, legal challenges<br>Closure and rehabilitation of abandoned wells<br>Industry pushback, legal challenges | No new licensing policy/ protection of natural areas<br>Stringent environmental permitting requirements and regulations for soil, water, and air quality<br>Moratorium on exploration and extraction<br>End-of-life and decommissioning requirements<br>Moratorium on exploration and extraction |
| No or marginal fossil fuel production<br>Significant reserves discovered | Push for new fossil fuel extraction projects | Engagement with communities potentially affected by new developments<br>Evidence-based policy-making (commissioning of scientific reports, etc.)<br>Strong environmental and social licensing requirements |
| Fossil fuel production, but in structural decline | Challenges of declines in production (historical dependence on the fossil fuel sector, employment reduction, outward migration, increased social needs, decreasing fiscal intake, etc.)<br>Lack of trust from communities reliant on the fossil fuel sector<br>Skills gaps and workforce transition<br>Pushback from neighbouring states and regions that rely on a subnational region's fossil fuel production<br>Federal government pushback<br>High emissions from fossil fuel production operations | Funding and regulations to diversify the regional economy away from fossil fuel production<br>Just transition policies to support workers and communities<br>Setbacks and protected areas<br>Setbacks and protected areas<br>Pursue supply-side policy in conjunction with demand-side policy<br>Measures to reduce emissions in the fossil fuel production sector |
| Stable or increasing fossil fuel production, with considerable reserves | Lack of immediate incentive to transition away from fossil fuel production | Studies on how declining fossil fuel demand will impact production |

Source: Authors' analysis.

We recommend that subnational states and regions pursue the following strategies:

**1. Diversify the local economy while pursuing a just, orderly and equitable transition away from fossil fuel production:**

- develop roadmaps to transition away from fossil fuel production in a just, orderly, and equitable manner that are time-bound, sequenced, and financed, and designed using whole-of-government and whole-of-society approaches;
- integrate multiple policy objectives and tools, rather than relying on stand-alone measures;
- set out clear pathways to transition away from fossil fuel production while supporting workers and communities and diversifying regional economies;
- co-design roadmaps through a dedicated task force and structured consultation with all affected stakeholders;
- focus economic diversification efforts on activities that reduce reliance on fossil fuels, rather than reinforcing it through downstream or energy-intensive activities such as refining, petrochemicals, carbon capture and storage, or fossil fuel-based power and heavy industry, which lock in emissions and increase economic dependence on fossil fuels.

**2. Reduce greenhouse gas emissions from existing fossil fuel production operations, particularly Scope 1 and 2 emissions:**

- use emissions-reduction measures to complement, not substitute for, a transition away from production;
- prioritize these measures as short- to medium-term actions while transition plans are implemented;
- focus economic diversification efforts on low-carbon and forward-looking sectors that support long-term resilience and alignment with climate objectives.

**3. Strengthen multilevel engagement and policy alignment:**

- engage closely with cities, municipalities, and local communities on the energy transition;
- develop and communicate clear policy positions, including on policy areas formally reserved to the national level, and advocate for national transition plans and roadmaps;
- align subnational actions, where relevant, with nationally determined contributions, national adaptation plans, national investment plans, and donor frameworks.

**4. Engage in international cooperation and peer learning:**

- participate in initiatives such as BOGA, the Powering Past Coal Alliance, SMAC, the Fossil Fuel Treaty, and COFFIS.
- engage with convenings hosted by the Under2 Coalition to support peer exchange, skills development, and navigation of the international policy landscape.

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