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How Colombia can plan for a future without coal

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About 80% of the world's current coal reserves will likely need to remain unused to keep global temperatures to the "well below" 2°C outlined in the Paris Agreement (McGlade and Ekins 2015). Even under this scenario, the world will continue to observe climatic impacts with ecological and economic consequences. Latin America faces this future with fragile natural capital and vulnerable infrastructure (UNEP 2017), and the highest levels of inequality in the world (ECLAC 2017).

Many countries – even those that recognise the need to curb global greenhouse gas emissions – continue to rely on fossil fuel exploitation as part of their economic development strategies and to offer public subsidies for further exploration (Oil Change International 2017). Nonetheless, countries that export coal and other fossil fuels could face a significant decrease in global demand in the near future, perhaps even within ten years (Carbon Tracker Initiative and Grantham Institute 2017; Mercure et al. 2018). The mining sector simultaneously has seen rapid technological improvements towards increased mechanisation (Balch 2017), suggesting declines in employment and changes to regional coal economies. Managing the resulting socio-economic transition – without major disruptions and negative impacts – is extremely complex and politically sensitive, as demonstrated in past cases of mine closure and technological change (Sartor 2017; Macmillan 2017). The effective management of mining transitions requires long-term planning and the coordinated involvement of a broad range of actors (Neil 1991).

In this brief, we explore what a sudden decline in coal demand could mean for Colombia, particularly in its coal mining regions. We reflect on possible alternatives to coal mining in these regions, and we discuss whether Colombia is considering the coal decline scenario in its domestic planning processes. We also highlight the role that public and private actors could take in ensuring that a socio-economic transition away from coal mining is smooth, rather than abrupt and disruptive.

These insights come from discussions during a workshop in Bogota in March 2018[1], as well as interviews with public officials, business associations, civil society organisations, and researchers in the Cesar department, one of Colombia's main coal-producing regions.

An uncertain future for Colombian coal

Colombia is the world's fourth largest thermal coal exporter (IEA 2017). More than 90% of the country's coal production was exported in 2017 (SIMCO 2018), and coal represents about one-fifth of its international trade income (Observatory of Economic Complexity 2018). The country's economic policy emphasises natural resources exploitation to encourage growth, attract foreign investment flows, and support public spending.

Photo (above):
Drummond's Pribbenow mine.
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1 The workshop, "*Preparing for global coal consumption decline: building resilient societies in times of transition*", was hosted by the Stockholm Environment Institute and Grupo Laera in Bogota on 15 March 2018. Participants included public officials from national and regional governments, researchers, and civil society organisations.

Prospects for Colombia's coal sector are, however, uncertain. Reduced global demand and oversupply has decreased coal prices, while concerns about a carbon bubble (and support for tackling climate change) have driven financial divestment from coal assets. At the same time, renewable energy costs have plummeted. These structural changes are reflected in the constant downward adjustments in coal demand projections by key energy forecasters (Bloomberg 2017; IEA 2016b). Recent modelling of global energy markets suggests that coal demand will begin to stagnate or decline almost immediately, though the forecasts for different regions differ markedly (British Petroleum 2018; IEA 2017; Carbon Tracker Initiative and Grantham Institute 2017).

Colombia's main export markets for coal have traditionally been Europe and the Americas (especially the United States), where future demand is expected to decrease as these regions seek to decarbonise their own energy sectors (IEA 2016a). In the U.S., despite attempts by the new administration to stimulate coal power generation (Plumer 2018), trends remain towards decarbonisation, notably with the increased use of both renewables and natural gas (EIA 2018; Lott 2018). The only region where coal demand is expected to rise is Asia, but competition there is stiff among large exporters such as Australia and Indonesia. Other factors also limit Colombia's chances to sell coal in Asia – namely, the fact that its coal infrastructure is located on the Caribbean coast and that the country suffers from infrastructure bottlenecks, which make transport costs relatively high (IEA 2016a). Overall, despite the competitiveness of its coal in terms of its quality and low production costs, the future for Colombia's export looks increasingly uncertain (Transforma 2017; Oei and Mendelevitch 2018).

Two major thermal coal producers, Cerrejon and Prodeco, recently began closure planning for their mines. This process is part of every mine's production life, and typically takes 10-15 years. But Colombia's coal demand could drop away much sooner than that.

So what would a rapid drop in coal demand mean for Colombia? And what discussion is happening domestically about such a scenario?

Challenges associated with a coal transition in Colombia

Any decline in production could have significant effects on public revenues and investments in Cesar and La Guajira, the two departments that produce and export over 90% of Colombian coal (SIMCO 2018). In 2016, the industry contributed 38% and 44% of the regional GDP in these departments, respectively (DANE 2018c). Furthermore, in La Guajira, the municipalities of Albania, Barrancas and Hatonuevo received more than a third of their total income from coal royalties in 2015 (Chacón et al. 2015). Declining production therefore could decrease public income levels, which could in turn lead to a decrease in public investment and the ability to provide public services.

Employment impacts came up as a key concern both during interviews and in workshop discussions. Currently, large-scale coal operations in the Cesar and La Guajira departments support about 30,000 direct jobs. Small and medium mines support an additional 100,000 jobs in the Cundinamarca, Boyacá, Norte de Santander, Santander and Antioquia departments (Habib Daza 2017).[2] There are limited alternative employment options in the Cesar and La Guajira departments, particularly for a workforce with low education levels. None offer equivalent salaries to mining.

Recent modelling of global energy markets suggests that coal demand will begin to stagnate or decline almost immediately

Another key concern is that changes in household income levels and in mining companies' local expenditures will have flow-on effects for the regional economy. This would indirectly affect other economic sectors, such as construction and commerce – as well as the real estate market, especially in the regional centre of Valledupar.

Stakeholders also worry that a decline in coal demand could affect the country's economic growth and trade balance. In 2015, coal mining represented about 1.3% of the country's gross domestic product (GDP) and 12% of exports (MME 2016). It comprises 80% of all mining royalties in Colombia (Habib Daza 2017), meaning it represents a significant portion of the 2.4% in national income that comes from all

2 There are no precise statistics on this that are publicly available. These numbers are the ones regularly mentioned by officials of the Ministry of Mines and Energy and the National Agency for Mining.

mining taxes, royalties and other financial compensations (EITI and Gobierno de Colombia 2017). The recent drop in crude oil prices illustrated Colombia's vulnerability: the decline in oil revenues between 2014 and 2016 significantly weakened the country's fiscal position, as it led to an sharp increase in the debt from 36% of GDP in 2014 to 41% of GDP in 2015 (OECD 2017).

Even though the coal boom has catalysed, to a limited extent, some regional investment in infrastructure and services, the Cesar and La Guajira departments remain below the national average in key development indicators. In 2017, the poverty incidence in these departments was 40.7% and 52.6% respectively, well above the national average of 26.9% (DANE 2018a, 2018b). The benefit of royalties to mining communities is thus questionable. However, a sharp decline in royalties could have serious impacts on public service delivery, if governments do not prepare for that possibility.

In interviews, officials and researchers mentioned that mine closure may have favourable environmental implications, such as emission reductions and improved health for workers and nearby residents. But there are also concerns about the long-term pollution of ground and surface water, and its remediation.

Under Colombian law, mining companies need to provide a closure and rehabilitation plan in order to obtain their environmental license. However, some fear that mine rehabilitation will not be managed well, and that communities will not be compensated for the negative impacts that cannot be mitigated or addressed. This lack of trust extends beyond the mining companies to include the State, with concerns about whether environmental institutions have the will or (technical and financial) capacity to ensure the rehabilitation process is enforced and managed properly. In interviews, officials and researchers also raised concerns about the lack of workers skilled in mining closure and rehabilitation – as well as the lack of educational opportunities to acquire these skills regionally.

Another concern – raised in both interviews and the workshop – is that declining production will trigger migration flows from coal mining areas to the regional centre of Valledupar. This happened during the late 1980s and early 1990s, following the decline of the cotton industry (DNP and Cesar Government 2011). Large population inflows would place stress on public services, such as water, sanitation, health and education. Some fear it could also create social instability and insecurity.

A coal transition could also be challenging from an institutional perspective. The country's structural problems include limited financial, human and institutional capacity at local and regional levels, ineffective policy coordination between different parts of government, low levels of civil participation, and high social inequality (OECD 2015a). Decades of violent conflict and high levels of corruption also have contributed to a distrust towards political authorities and state institutions (2003). This not only discourages participation but could also put at risk the effective elaboration and execution of measures to address mining decline.

Participants to the workshop emphasised that the prevailing discourse around extractive industries (including coal and other types of mining, as well as oil and gas extraction) also makes it very difficult to get coal transitions on the public agenda. Indeed, since the beginning of the 2000s, the national government has characterised the extractive sector as essential for economic growth and for fighting poverty and generating development (Vélez-Torres 2014). Since 2014, the government's narrative has also framed the societal value of extractive industries in terms of their contribution to peace implementation (González Espinosa 2015).

Finally, most policy planning occurs on a four-year cycle, following the length of the typical political term, while a mining transition plan usually covers at least 10 years (Neil 1991). Exceptions include the work done by the National Planning Department and the Mining and Energy Planning Unit. Getting a coal transition on their agenda is therefore essential.

While agriculture is often mentioned as an alternative driver to regional economic growth, many barriers to this sector's development remain in coal producing areas. © ADAM COHN/ FLICKR

Alternatives to coal-led regional economic development

So far, there has been virtually no public debate about preparing for a decline in coal demand. Key policy documents at national, departmental and municipal levels do not consider mine closures or other potential impacts of a global shift away from coal. For example, although they consider economic diversification, none of the four scenarios in the Cesar department's 2032 development vision

contemplates a significant decline in coal exports (DNP and Cesar Government 2011). This effectively builds long-term dependency on natural resources extraction. Moreover, Colombia's historical experience with regional economic shifts is not encouraging. After the 1978 cotton crisis, the central government's limited measures failed to help affected areas rebuild the economy. A deep and long economic and social crisis followed, contributing to land-related conflicts (González 2014).

Producing countries might be tempted to increase their own consumption as they face shrinking external markets and face electricity supply challenges. Colombia has seen some expansion in coal-power generation, for instance (Portafolio 2018). Such a strategy comes with an array of risks, such as increased greenhouse gas emissions, air pollution, stress on water supply (Gibon et al. 2017), and associated socio-environmental conflicts (Cárcamo et al. 2011; Kotikalapudi 2016).

But alternative economic activities are difficult for communities to imagine. The Cesar and La Guajira departments have been producing coal since the 1990s and 1980s, respectively. Agriculture and livestock were the main alternatives mentioned by workshop participants and interviewed stakeholders. These sectors are essential sources of employment in rural Colombia. In 2012, for example, the agriculture sector represented 19% of employment in the Cesar department (MinTrabajo and FUPAD 2014). But making this sector the driver of the post-coal regional economy represents a challenge. Its productivity is hindered by significant structural shortcomings, such as lack of infrastructure, unequal access to land, land use conflict, weak supply chains, and high levels of migration and social inequality (OECD 2015b). Addressing these structural barriers is therefore an essential component for any strategy to navigate Colombia's transition away from coal mining.

Not all types of agricultural activities contribute to regional development equally. © ADAM COHN/FLICKR

Even if addressed, agriculture is not a direct substitute for mining. Mining salaries are typically at least twice the amount of those in the agriculture sector, and many mining employees may be uninterested in entering the agriculture and livestock sectors. Further, not all types of agricultural activities contribute to regional development equally. Large-scale and high-tech production may contribute more significantly to regional economic output, but it can also reduce food security and generate land conflicts (Gazzoni 2009; Ávila González 2015). Competition for water resources is also a concern in these relatively dry regions, where climate change impacts could include lower precipitation and higher average temperatures (IDEAM, et al. 2015).

Tourism is another possible substitute, given the cultural and natural attractiveness of the broader region. However, coal-producing areas have little tourism infrastructure. Together, the Cesar and La Guajira departments represent only 3% of the country's registered tourism employment and available beds (CITUR 2018). Tourism is one of the key economic sectors prioritised in the policy document *Visión Cesar Caribe 2032*; however, the document also stresses that tourism activity in the region is nascent, and that important infrastructure improvements are needed to harness the sector's potential (DNP and Cesar Government 2011). In the La Guajira department, tourism has increased rapidly as the security conditions have improved, despite its limited infrastructure (Guerrero 2017). However, there is mixed evidence about the extent to which tourism can drive sustainable development (Devine and Ojeda 2017; Rozo Bellón and Garavito González 2014; Becken and Carmignani 2016).

Going forward

Navigating socio-economic change in the face of a coal mining decline is a daunting prospect. Nevertheless, there are examples of successful large regional economic shifts away from mining (Gales and Hölsgens 2017; Tykkyläinen 1991; Keyes 1991). These cases show that:

- Long-term anticipation is key.
- Coordination between governments at different scales – and the involvement of local communities, mining companies and trade unions – is essential.
- An important aspect of planning efforts is putting in place financial support for transitions.

In this section we elaborate on these elements and suggest some starting points to build socio-economic resilience in the wake of coal production decline.

Long-term transition planning

Relatively successful economic shifts away from natural resources extraction typically happen over a period of several decades. The perceived far horizon of mine closure and the cyclical nature of mine production tend to disincentivise public authorities from taking steps well in advance. However, the benefit of long-term anticipation is clear: it gives national and subnational authorities – as well as people that depend on the industry – time to identify alternative economic activities, as well as mobilise the resources needed to develop these alternatives (Neil et al. 1991).

In Colombia, two national institutions have an important role to play in planning for a coal decline: the National Planning Department (DNP) and the Mining and Energy Planning Unit (UPME). NDP supports mid-term and long-term (cross-)sectoral regional and national planning, while UPME develops long-term energy scenarios and helps set long-term mining policy objectives. Most stakeholders see these as the key institutions to take responsibility for, and begin leading, dialogue and planning for post-coal scenarios.

These institutions could begin with an analysis of the macroeconomic, social and environmental impacts of a faster-than-anticipated decline in coal production. Indeed, it is important for preparatory action to generate acceptance and anticipation of the need to transition (Caldecott et al. 2017). Together with research institutions, national and departmental planning institutions can also help assess these potential impacts at the regional and local scales. This could help create awareness of the scope of the challenges to come, as well as highlight areas where it is crucial to build resilience.

The DNP could also work with sectorial ministries – such as the Ministry of Commerce, Industry and Tourism (MCIT), the Ministry of Housing, and the Ministry for Agriculture and Territorial Development, (MATD) – to help local and regional authorities identify sustainable economic alternatives and ways to enable their development. This should be done with input from trade unions, civil society and business associations. Past cases of successful mining transitions suggest that strategies should promote a diverse range of economic activities rather than one unique alternative (1991). Moreover, it is useful for planners to think in terms of progressive change in the regional economy with some temporal overlap between driving sectors. For example, when iron mining declined in the Canadian town of Atikokan, the local economy progressively moved to services and forestry. While those new sectors were taking off, public investments in new infrastructure helped maintain some level of employment and economic activity (Keyes 1991).

Past mining transitions also show that subnational governments play an important role in promoting economic diversification and preparing for mine closure. Their capacity to mobilise financial, human, technical and institutional resources is key. The process works better when subnational entities look for alternatives and seek help to implement them, rather than when they look for unilateral external assistance (Neil et al. 1991).

It is also important to bear in mind the potential social and environmental impacts of other economic sectors, and to identify and mitigate risks in advance. Some stakeholders emphasise the importance of ensuring that the coming economic transition is just, or done in a way "where social progress, environmental protection and economic needs are brought into a framework of democratic governance, where labour and other human rights are respected and gender equality achieved" (ITUC 2015). This is especially relevant in Colombia, where building social equity, especially regarding access to land, was an indispensable element of the peace process and the first pillar of the Final Agreements to be agreed upon.

Long-term planning should also account for labour skills. The National Service for Learning (SENA) – which offers free technical training to support the country's economic, technological and social development – could work with national agencies and local universities to prepare a new generation of professionals whose skills and knowledge will support the regional transition.

Policy coordination

A coal mining transition is complex, involving numerous economic actors with distinct interests. Mining companies, governments and individuals all have their own goals and planning limitations (Neil et al. 1991).

Section of a mural in Valledupar, reflecting on the region's cultural Vallenato legacy and its link to the land. © CLAUDIA STRAMBO/ SEI

Some mining countries have established institutions that help coordinate efforts across society, increasing efficiency in policy and program implementation. The Canadian Association of Single Industry Towns, for example, managed capacity-building programs in the 1980s to support economic diversification in cities that were reliant on a single industry like mining (Hagan and Cecil 2007). In Australia, the Latrobe Valley Authority (LVA) is a partnership between the community, industry and government; it helps workers access training and employment services, facilitates new business development and invests in infrastructure improvements, among other things. Germany established a task force on phasing out coal power in 2018 to help manage the complex transition in coal-producing areas (Wehrmann 2018).

Street of Atánquez, in the Sierra Nevada © CLAUDIA STRAMBO/ SEI

In Colombia, however, a new institution could generate resistance for its cost and added complexity, since the country recently created a series of new institutions to implement the Peace Agreements. An alternative strategy, therefore, is to identify existing policy processes that can accommodate and drive debates and planning about what happens after coal.

Workshop participants identified a few opportunities, such as the elaboration of the Territorial and Departmental Planning Plans (*Planes de Ordenamiento Territoriales and Planes de Ordenamiento Departamentales*) and the Territorial Focused Development Plans (*Planes de Desarrollo con Enfoque Territorial*), as well as the Cesar Intersectoral Competitiveness Commission , among others. The advantage of these processes is that they already include a variety of societal actors, including from the private sector and civil society. The next National Development Plan (2019-2022) is also an opportunity to rethink the extractive-based economic development strategy more broadly. The Plan could also include policy objectives and strategies that help mining regions successfully diversify and address challenges associated with mine closure.

Financing transitions

In the face of global market uncertainty and a likely decline in demand for Colombian coal, it is essential to avoid investments (and institutional arrangements) that deepen mid- and long-term dependency on coal mining. Instead, the country should use its available resources to invest in sectors, infrastructure and services that will be important post-coal. Various funding streams support regional development, including national budget allocations, local and departmental tax collection, and royalties. Another funding stream includes international development cooperation; much of this stream currently targets the peace process and environment-related issues (such as climate mitigation and adaptation, and deforestation reduction).

Managing a coal decline while maintaining regional economic growth, quality public services and support for workers and inhabitants will require significant financial resources. Some countries have set up special funds to support mining transitions. In Australia, for instance, the Latrobe Valley Economic Facilitation Fund supports growth and new job creation (Wiseman et al. 2017). Canada's Community Futures Program of Employment and Immigration is another example; the national government set up the program to support regional economic development and help communities prepare for mining closure and its aftermath (Keyes 1991).

In Colombia, resource efficiency requires tackling the long-standing structural obstacles to rural development, such as corruption and a lack of research and institutional capacity. Strong and functional institutions are essential for managing mine closures, from both an environmental and socio-economic perspective.

Mining companies in Colombia are liable for environmental damage for only three years after a mine's closure – less than other important mining countries[3]. Only strong environmental institutions can guarantee that the law and conditions set in mining licenses are respected, as international mine closure guidelines are voluntary-based. More broadly, effective monitoring of mining transition processes and the engagement of a wide range of local stakeholders in setting new development priorities and strategies would also require improving historically low levels of participation and social trust. Of course, addressing these barriers is not only a precondition for relatively smooth (coal) mining transitions, but also for the peace implementation process, and most likely, any kind of complex societal transformation in Colombia.

3 In Chile for example, the guarantee is not time-limited but extends until mining companies demonstrate full compliance with closure obligations (Ministerio de Minería 2011).

Conclusion

The pace at which demand for Colombian coal will decline remains uncertain. It depends largely on what happens in international coal markets and, to a lesser extent, on Colombia's appetite to increase coal power generation within its own national energy mix.

Nevertheless, a shift in regional economies, if not the closing of operations altogether, is inevitable. Two top coal miners in the region are starting to implement their closure plans. At the same time, rapid technological improvements suggest that mining employment may undergo significant adjustments over the next decade (Balch 2017). Anticipation is key for the process to be handled as smoothly and effectively as possible.

It is essential to start thinking and planning for a post-coal economy in regions that are highly dependent on coal mining. Pre-emptively planning for a shift away from coal is a complex process that involves multiple interests, groups and institutions. It requires a sound analysis to identify opportunities for innovation and to promote the growth of other sectors of the economy, including in sectors such as new agriculture products, low-carbon industries, or housing/infrastructure construction. Colombia can start now, with an assessment of the environmental, economic and socio-political impacts of a significant decline in coal production. It is also important to identify policy spaces to hold a public and inclusive debate on the issue, to take stock of ongoing initiatives by both public and private actors, and to agree on strategies to address and finance socio-economic components of mining decline.

Colombia has so far not planned for a post-coal economy, despite the likelihood that coal demand will decline faster than expected. It should start planning at both the national and subnational level. For this, the participation of planning, mining, environmental and rural development institutions is essential, as is the involvement of other sectors of society, including local and regional business associations, civil society groups, academic institutions, and professional training organisations.

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