



Exploring resilience in public services within marginalised communities during COVID-19: The case of coal mining regions in Colombia

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ABSTRACT

This paper examines the impact of COVID-19 on marginalised communities and its effects on the provision of public services. Focusing on two coal mining regions in Colombia during the pandemic crisis, and examining Indigenous and Afro-Colombian communities, we analyze the provision of public services at a local level, identifying both shortcomings and resilience. Findings show that the lack of resilient public services amplified the effects of COVID-19 and its containment measures, exacerbating existing structural inequalities within local marginalised communities. It also reinforced the control exercised by coal mining companies within local economies. However, the substantial lack of public service provision also provided space for the development and strengthening of several resilience strategies among local communities, such as solidarity networks and schemes and the revitalization of local environmental knowledge. The study identifies multiple shortcomings in how the national and local administrations handled the COVID-19 outbreak and highlights the potential of enhancing resilience in public services to support marginalised communities in times of crisis.

1. Introduction

Since its outbreak in early 2020, COVID-19 has significantly affected the ability of local administrations to deliver efficient public services, defined in this paper as services directly or indirectly provided by national governments and public sector bodies to citizens and communities (Sancino et al., 2020). In Colombia, COVID-19 has put unprecedented pressure on the health and welfare system, which struggled to respond adequately to the local population's demands and needs (Severo et al., 2021). The reforms made in the country during the 1990s, aimed at decentralizing services, transferring essential governance responsibilities from the national government to subnational administrations, and increasing political participation and involvement for traditionally marginalised communities such as Indigenous and Afro-Colombian people. However, in their areas, the provision of public services after reforms still heavily relied on both local government's political willingness and the ability of marginalised communities to hold local public institutions accountable.

Colombia is the world's fifth largest global coal exporter, with \$5.2

billion worth of export recorded in 2019 (Workman, 2020). Most coal mines are located in the administrative departments of Cesar and La Guajira, home to a significant population of Indigenous and Afro-Colombian people. According to the National Administrative Department of Statistics (DANE) Census, the two groups accounted for 4.4% and 9.3% of Colombia's total population in 2018. In La Guajira, 45% of the population self-identified as Indigenous, while 7.5% self-identified as Afro-Colombian; similar percentages were registered in Cesar (DANE, 2018).

The economies of La Guajira and Cesar depend heavily on coal mining royalties, with mining operations and activities significantly affecting people living in these two administrative departments. In 2019, more than 16% of the population lacked access to health services in La Guajira; infant mortality in this administrative department was the highest in the country, with 20% of children under one year unvaccinated (UNEP, 2019). In the same year, only 4% of the rural population had access to water supply, and only 3.7% of households had internet access; overall, 52% of the population lived in houses with a qualitative deficit (UNEP, 2019). The situation was a bit better in El Cesar for almost

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every indicator of public service provision, although still behind national averages: prior to the pandemic, 14% of its population lacked access to health services; infant mortality in this administrative department was among the highest in the country with 10% of children under one year unvaccinated. About 43% of water in rural areas were assessed as risky for human consumption, and 46% of the population lived in houses with a qualitative deficit (PNUD, 2018).

Public services such as environmental monitoring and protection, judicial courts, and policing, are essential for assessing and reducing the environmental damage created by agricultural, logging, and mining industries, severely affecting Indigenous and Afro-Colombian residents¹ in La Guajira and Cesar. Prior to the COVID-19 outbreak, many activities and initiatives associated with education, recreational, and social projects, which should have been supplied by local administrations, were frequently funded by mining companies (Drummond, 2020; Prodeco, 2020). During COVID-19, with public services facing more significant challenges, the volume of services provided by mining companies at a local level, predominantly in health and education, increased even further. As a result, COVID-19 might have made local communities in the two administrative departments even more dependent from mining companies, despite the negative impact they absorb in terms of heavy pollution, degradation of health and well-being (Vega-Vargas and Rodriguez, 2020). While national statistics on COVID-19 hospitalisations and deaths are often not disaggregated by racial or ethnic background, evidence identifies Indigenous and Afro-Colombian people as more vulnerable to infections (Moore et al., 2020), hospitalisation (Serván-Mori et al., 2022), and death (Santos et al., 2021; Shiels et al., 2021) than other groups.

This paper investigates how Indigenous and Afro-Colombian communities in coal mining regions of Colombia have responded to COVID-19. We hypothesize that more resilient public services could have diminished the negative effects of the pandemic crisis for these marginalised communities, exploring how public services can facilitate environmental and social justice. We address the following questions: *i) How did COVID-19 affect public sector resilience, and what it signified for more vulnerable communities at the local level? ii) How did public services in coal mining regions in Colombia respond to COVID-19? iii) How enhancing public services resilience can contribute to achieving sustainability for coal mining regions and beyond?*

This study aims to make a two-fold contribution. First, it builds on the literature about the impact of COVID-19 on marginalised communities in the Global South, which are likely to have been affected more severely from the pandemic crisis compared to other communities in the Global North (Moore et al., 2020; Shammi et al., 2020). Focusing on coal mining regions in Colombia, we analyze original data in view of understanding how the crisis has had an impact in marginalised communities and how these communities reacted to worsened levels of inequalities affecting employment, household incomes and welfare (Santos et al., 2021; Gilbertson, 2021). In addition, responses collected from different segments of coal mining communities are analysed from a social and environmental justice perspective, for which there is still a paucity of empirical work (Weber et al., 2021).

Second, we examine how the crisis affected the provision of public services in Colombia and how multinational mining companies exploited the vacuum left by national government and local administration to extend their control on local communities (Weber and Cabras, 2021). We investigate how actions and strategies displayed by marginalised communities absorbed gaps in local administrations and reconfigured operations in view of increasing resilience (Boschma, 2015; Acevedo-Duque et al., 2021). Outcomes from this analysis aim to inform policies

and initiatives to increase the level of public sector resilience in times of crisis and offer insights to practitioners and policy-makers to prepare for future challenges (Silva et al., 2020; Peredo et al., 2022).

2. Theoretical background

2.1. Defining resilience

Resilience is defined as the ability of a system to thrive and adapt to changes (McCarthy et al., 2017). The concept of resilience has been applied to at least five domains: individual, ecosystems, community, organisation, and regional (Berkes and Ross, 2013; Boschma, 2015; Eachus, 2014; Holling, 1973; Hillmann and Guenther, 2021). Individual resilience refers to the ability to function well under stress resulting from several elements such as personality, sense of coherence, self-efficacy, social support and life events (Eachus, 2014). Community resilience, sometimes called social resilience, defines the existence, development, and engagement of community resources by community members to thrive in an environment characterised by change, uncertainty, unpredictability, and surprise (Berkes and Ross, 2013).

Community resilience is an important indicator of social sustainability, as it strongly relates to ecological resilience, defined as the amount of disturbance that an ecosystem could withstand without changing self-organized processes and structures (Holling, 1973). Ecological resilience is a 'measure of systems' persistence and ability to absorb change and disturbance and maintain the same relationships between populations or state variables' (Holling, 1973, 14). The three concepts – individual, community, and ecological resilience – are synergistic, evolutionary and inextricably binded to the resilience of local ecosystems (Berkes and Ross, 2013; Eachus, 2014).

Organizational resilience refers to resilience across complex social systems (Hillmann and Guenther, 2021), such as public services, regional administrations and societies. Public sector organizations and their employees frequently face multiple challenges such as resource constraints, rising work demands, and tensions arising from public sector delivery, often characterized by the need to balance different stakeholder interests (Franken et al., 2020). In such context, employees' resilience, defined as their capacity to continuously adapt and flourish despite challenges, is an individual-level construct that also benefits the organization (Franken et al., 2020).

Resilient social systems incorporate processes of adaptation, learning, and self-organization alongside a general ability to 'persist through disturbances'. Boschma (2015, 733) defines regional resilience as the 'long-term ability of regions to develop new growth paths', with resilient regions capable of overcoming the trade-off between adaptation and adaptability. Adaptation concerns change along preconceived paths, while adaptability refers to the long-term adaptive ability of an economic system seeking qualitative changes or shifting of industrial paths, development modes, and systematic institutions (Boschma, 2015).

From a locational perspective, resilience deals with the enquiry of "how to secure adaptation and adaptability simultaneously" (Boschma, 2015, 734). However, social, environmental, economic, and financial crises have challenged the delivery capability of public sector organizations in several countries over time (Bracci and Tallaki, 2021). Frequently, different forms of institutional governance have supported or undermined environmental justice in their pursue of resilience. For instance, Sandoval et al. (2014), analysing the government policies implemented after severe floods in Chaiten (Chile), indicates that although the policies increased resilience within the local communities, they also increased inequalities, segregation, and environmental damage in the city. If resilience is to be developed at all levels within public sector organizations, then localised leadership is essential for concentrating branch-level energies and linking effectively with the central leadership (Harland et al., 2005).

¹ A comprehensive overview of the environmental conflicts of Colombia and the territories and communities affected by mining, large infrastructure projects, and unauthorised logging can be found in the Observatory of Environmental Conflicts website (<https://oca.unal.edu.co/>).

2.2. Resilience, public services and marginalised communities during COVID-19

The literature on five types of resilience—individual, ecosystems, community, organizational, and regional—seems to neglect the role of public administration in pursuing resilience. Focusing on public services, [Duit \(2016\)](#) defines resilience in terms of the functioning of services, for instance water and energy supply, public transportation, or environmental protection, and in terms of structure e.g. the extent to which a public service organization can maintain its internal command configuration, information flows, and capacity to function effectively during a crisis.

The ability to deliver public services, without interruption or detriment to their standards, during a crisis or under significant pressure, frequently indicates public sector resilience at a country or local context (see [Kim et al., 2020](#)). The number of studies addressing public sector resilience and sustainability is still limited, with a few exceptions (see [Castan Broto and Dewberry, 2016](#); [Henderson et al., 2018](#)). More recently, COVID-19 has incentivized researchers to investigate resilience and sustainability in the provision of public services, including decision-making processes within public management organizations and local administrations. [Trump and Linkov \(2020\)](#) argue that policy decisions in the short term will directly influence the capacity of regions to recover, providing opportunities to address the disruption caused by COVID-19, to adapt and ‘bounce forward’ with the collective effort of governments, organizations, and broader civil society. [Kim et al. \(2020\)](#) state that local government agencies need to work closely with local partners in the phase of hazard mitigation to improve public service resilience. [Giovannini et al. \(2020\)](#) highlight the urgency for national governments to ensure and enhance societal resilience. Potential post-COVID-19 crises will likely emerge from combinations of environmental degradation, increasing inequalities, and deep economic interconnections have made ecosystems more vulnerable.

Public administrations’ responses during the pandemic crisis often required robust government initiatives on dynamic state-led entrepreneurship and innovation. [Mazzucato and Kattel \(2020\)](#) indicate that the entrepreneurial role of the public sector in leading a dynamic response is overlooked in favour of a primary role for the private sector. This issue requires a stronger role of both national government and local authorities in providing and managing resources to face a pandemic crisis. Instead, solutions in times of crisis are often resourced by private-sector institutions and strategies; governments then need to develop ‘the capacity to adapt and learn, align public services and citizen needs, the capacity to govern resilient production systems, and capacity to control data and digital platforms’ ([Mazzucato and Kattel, 2020](#), 1). Likewise, public services such as health care should focus more strongly on remote and spatially remote communities since these areas are disproportionately affected by COVID-19 compared to others ([Rivera-Hernandez et al., 2021](#)). [Sancino et al. \(2020\)](#) state that public sector managers could make more equitable decisions by visualizing trade-offs and co-create better strategies by taking the perspective of those experiencing the effects of public services. However, examining the key challenges posed by COVID-19 for public administrations, issues such as justice, inequality and social disadvantage directly challenge governments, their roles and initiatives. Moreover, the pandemic crisis has further increased the pressure towards digitalization of public services although remote and spatially remote communities, as well as marginalised communities, are likely to be disproportionately disadvantaged compared to others, for instance, urban communities and more affluent segments of the society ([Weber et al., 2021](#)).

The impact of COVID-19 highlights the dilemma faced by public administrations to either limit the spread of infections with lockdown, thereby exacerbating issues affecting the poorer segments of societies ([Arndt et al., 2020](#)), or follow a *laissez-faire* approach based on reducing the economic impact of the pandemic despite a likely surge of infections and casualties ([Domingues, 2020](#)). There is a paucity of studies in the

field addressing public administrations’ responses to COVID-19 across the Global South, or investigating levels of well-being and public health services related to marginalised communities, with a few notable exceptions. For example, [Shammi et al. \(2020\)](#) examine Bangladesh’s health policies and legislative structures, highlighting the inadequate financial and logistic resources and poor planning; while [Feitosa et al. \(2021\)](#), examining the *Quilombo*,² found that these communities had limited access to health services compared to other communities, and negatively perceived the quality of assistance received and commitment of health managers towards their issues.

In Colombia, COVID-19 caused over 6 million cases and approximately 138,000 deaths between April 2020 and February 2022 ([Prada et al., 2022](#)). The country has also experienced one of the worst economic recessions in its history, which inevitably affected its Colombian healthcare system, and some public health indicators significantly deteriorated. The government organised an early and robust response, imposing a strict quarantine and lockdown, and launching a national vaccination strategy based on a flexible vaccine rollout. As of February 2022, about 65% of the population was fully vaccinated ([Prada et al., 2022](#)). However, the government was late to procure vaccines and did not tackle vaccine hesitancy appropriately, launching tax reforms during a long and unpredictable lockdown ([Prada et al., 2022](#)). These shortcomings affected both the vaccination strategy and the economic recovery, worsening the country response in terms of efficacy and efficiency.

In coal mining regions, and with regard to Indigenous and Afro-Colombian communities, it is likely that COVID-19 exacerbated these issues even further due to a lack of social justice and environmental justice. Social justice is defined as balancing benefits and burdens across all citizens in a given society, resulting in more equitable living for everyone ([Buettner-Schmidt and Lobo, 2011](#)); while environmental justice identifies a more equitable dissemination of environmental positive and negative externalities across all segments of the society ([Weber et al., 2019](#)). Research about these and other marginalised communities in mining regions has been progressively expanding in the *Journal of Cleaner Production* ([Hinton et al., 2003](#); [Pegg, 2006](#); [Whitmore, 2006](#); [Rodhouse and Vanclay, 2016](#); [Lara et al., 2018](#); [Boiral et al., 2019](#); [Shaffril et al., 2020](#); [Henriques and Böhm, 2022](#)).

[Hinton et al. \(2003\)](#) identified some communities in mining areas operating in a state of virtual lawlessness, with rampant drug and alcohol abuse, gambling, child prostitution and diseases; while other communities maintained a greater level of organization and cohesion even if still experiencing significant economic degradation and poverty. In such context, mining can positively contribute toward poverty alleviation for marginalised communities, but only if a variety of demanding preconditions ([Pegg, 2006](#)). Since the early 2000s, ‘sustainable mining’ approaches, based on more careful consideration of environmental impacts and more investment in greener technology and methods associated with mining activities, have become more prominent the agenda of many international processes ([Whitmore, 2006](#)). However, in Colombia, very little has changed for many Indigenous and Afro-Colombian communities affected by mining, as their involvement in the processes concerning royalties and use of lands is still very limited, and they continue to suffer degradation in terms of quality of life, health and environment ([Rojas and Montaña, 2022](#); [Turner et al., 2022](#); [Weber and Cabras, 2021](#)).

In recent times, the leading mining firms started to adjust their Corporate Social Responsibility (CSR) frameworks towards a more comprehensive human rights-based approach, in the attempt to engage with Indigenous communities ([Rodhouse and Vanclay, 2016](#)). However, these new CSR frameworks are still weak about protecting Indigenous, Afro-Colombian and other marginalised communities and their rights, and in terms of preserving their land, use of resources, and

² Brazilian settlements founded by people of African descendant.

self-determination (Boiral et al., 2019). The engagement and involvement of these communities, for example, in processes aimed at granting royalties to operate for extractive activities, remain mostly neglected in the new CSR frameworks (Rodhouse and Vanclay, 2016). Mining companies often fail to assess the social and cultural losses experienced by local communities, their deep connection with traditional territories and their “sense of place” in the area affected by mining activities (Henriques and Böhm, 2022).

Indigenous people tend to suffer from such shortcomings. Lara et al. (2018) claim that despite biological and cultural wealth in many Latin American regions, there are still high proportions of marginalised groups within autochthone populations, mainly due to a lack of autonomy granted to local communities in managing their own resources. While Paredes and Kaulard (2020) observe a growing involvement of the national government and local administrations in conservation policy across the Global South, they also indicate that policies aimed at mitigating climate crises and preserving native landscapes can reproduce ethnic exclusion and marginalization of vulnerable communities.

Afro-Colombian communities share very similar challenges to those faced by Indigenous communities. However, Indigenous people (about 2–3% of Colombia’s population) succeeded in obtaining their collective land ownership rights recognised and under the protection of the multicultural State Constitution for more than 24% of the national territory. In contrast, Afro-Colombian communities (approximately 25% of Colombia’s population) succeeded in obtaining their collective land ownership rights recognised for just about 2% of the national territory (Ng’weno, 2013). Moreover, Afro-Colombian communities in Colombia are more geographically dispersed and less organised. Their collective negotiation power is smaller compared to the Indigenous when dealing with coal mining companies. As a result, they are less likely to succeed when suing these companies for the environmental damage they created on their lands.

3. Methodology

3.1. Data and methods

This study uses a case study approach, focusing on two mining sites in La Guajira and Cesar to address the multiple complexities of COVID-19 in Colombia. The case study approach was selected to capture and examine the micro-dynamics of the phenomena at the national and sub-national levels (Yin, 2003). The proposed analysis adopts a transformational approach to resilience, focusing on the ability to ‘bounce-back’ to normal after a crisis and ‘bounce forward’ by responding and readjusting to shocks by elaborating on new capabilities (Trump and Linkov, 2020).

The information used for this study was collected in two phases. In the first phase, we systematically reviewed official reports from national and international agencies, national and regional newspapers, and other databases and media sources between March 2020 and January 2021. We performed document and archive research searching for the combinations of the following keywords: ‘COVID + Coal + Ethnic Minorities + Indigenous’ (COVID + Carbón + Indígena + Minorías Étnicas) in multiple databases focused on Indigenous issues provided by international, national, and regional agencies (see Table 1). The search also included the most important organizations such as ONIC (Organización Nacional Indígena de Colombia) and CNOA (Conferencia Nacional de Organizaciones Afrocolombianas). This phase led to collecting and reviewing 40 reports, official papers, and 474 news articles in Spanish and English.

All reviewed sources and documents were coded through deductive content analysis, a systematic tool describing phenomena and a widely used method of analysing documents (Myers, 2009). At the end of this process, specific aspects and features associated with the direct management of pandemic responses were evaluated by counting how frequently an item related to extractivism, pro-active governmental COVID-19 action, public sector engagement and reforms, and responsive crisis management appeared.

In the second phase, we analysed the findings gathered from phase one with information obtained from 35 semi-structured interviews conducted in Cesar and Guajira between January and February 2021, and April 2022. Interviewees included managers and employees of coal mining companies, local workers and business owners, representatives from the local government, trade unions, civil society organizations, NGO representatives, and academics at local universities. Sampling was based on the definition of relevant actors associated with the coal mining sector in the area considered, based from findings gathered during the literature review. The interview sample was compiled with the help of local partners who used their local knowledge and contact networks to arrange interviews. This support proved to be crucial when approaching local residents, whose already low levels of trust and confidence in ‘outsider researchers’ were further diminished by movement limitations and increased isolation imposed by COVID-19. In addition, the data collection was made more complex by both spatial remoteness of some communities as well as contextual factors such as infrastructural deficit, lack of internet connectivity, and safety concerns due to the presence of guerrilla groups in the studied areas. Relevant attributes related to interviewees and their backgrounds are provided in the Appendix.

Interviews were conducted in Spanish and lasted between 15 and 90 min, and focused on the following topics: (1) the importance and effects of the coal mining industry in the region, (2) the impact of the decline in

Table 1
Secondary data sources.

Source	Type of document	Number	Use in data analysis	Databases
Academic research	Peer-reviewed papers & dissertations	10	<ul style="list-style-type: none"> Understand the impact of COVID-19 on Indigenous population; 	<ul style="list-style-type: none"> Web of Science JSTOR
National Government and Local Authorities	<ul style="list-style-type: none"> Legislative Hansards Decrees White Papers Green Papers 	10	<ul style="list-style-type: none"> Contextualize different Indigenous situations in the studied regions. Understand public management programmes; 	<ul style="list-style-type: none"> Ministerio Interior Dirección de Asuntos Indígenas
Courts	<ul style="list-style-type: none"> Court Decisions 	5	<ul style="list-style-type: none"> Understand public management programmes; 	<ul style="list-style-type: none"> Corte Constitucional
Local NGOs	<ul style="list-style-type: none"> Official Reports Press releases Blogs & vlogs 	6	<ul style="list-style-type: none"> Understand public management programmes; Contextualize different Indigenous situations in the studied regions. 	<ul style="list-style-type: none"> Fundacion para la Conservacion y el Desarrollo Sostenible (FCDS) Fundacion Paz & Reconciliacion
International NGOs	<ul style="list-style-type: none"> Official Reports Press releases 	9	<ul style="list-style-type: none"> Understand public management programmes; Contextualize different Indigenous situations in the studied regions. 	<ul style="list-style-type: none"> The International Work Group for Indigenous Affairs (IWGIA) WWF
National and local newspapers [focus on Coal mining regions]	Articles & editorials	474	<ul style="list-style-type: none"> Identify statistics and events related to COVID-19 affecting indigenous populations, Identify initiatives and actions at local and national levels 	<ul style="list-style-type: none"> <i>El Tiempo</i> <i>The Guardian</i>

coal production associated with the COVID-19 outbreak, and (3) perspectives for the future. We used previous work conducted on this field and subject (e.g., Peredo and Anderson, 2006; Yanguas Parra et al., 2021; Weber et al., 2021) to assess responses and to filter information from interviews.

3.2. Study sites

The map in Fig. 1 shows the location of the two sites selected for this study. The Cerrejón mine, the largest open-pit coal mine in South America, is located in Cesar-Rancheria Basin, northeast Colombia, close to the border with Venezuela. The site extends over 690 square kilometres (270 sq mi). Over the last two decades, ownership of the mine was shared by three multinational mining firms: BHP (Australia), Glencore (Switzerland), and Anglo American plc (UK). However, in June 2021, Glencore acquired sole ownership of the mine. In Cesar, two multinational mining companies control most mines: Drummond (with headquarters in the USA) and Prodeco (Colombian subsidiary of Glencore). In February 2021, Prodeco decided to withdraw from its coal mining concession and cease its operation at the Mines Calenturitas and La Jagua in Cesar, arguing that mining in this region is no longer profitable (decision effective from September 2021). In the same region, Drummond, a US company, controls the Pribbenow and El Descanso mines.

In La Guajira, more than half a million people are Indigenous and Afro-Colombian, with a total population of about 880,000 (DANE, 2019). The largest group among Indigenous people is predominantly Wayuu (380,460), followed by other small communities (Kogui, Wiwa, Ika, and Kingui), while approximately 100,000 people are Afro-Colombians (CNOA, 2021). Both Afro-Colombians and Indigenous people are overrepresented across the mining regions; coal mining represents a source of income, especially indirectly by selling food and other goods to miners despite their traditional activities such as fishing, agriculture, trade, gastronomy (Afrocolombianos) and textile production (Wayuu) (CNOA, 2021).

In Cesar, Afro-Colombians and Indigenous people (predominantly Wiwa and Arhuaca) represent 10% and 5% of the region's 1.3 million population (DANE, 2019). In years, much attention has been paid to Cerrejón's operations on Indigenous Wayúu lands, while the effect of Prodeco and Drummond on Afro-Colombian and other Indigenous communities has been less researched (Gilbertson, 2021). Nearly all of the forest in Cesar near the mines has disappeared, the underground aquifers have been permanently damaged from the deep mining pits, and rivers have been diverted away, especially from various Afro-Colombian communities living within proximity to the Prodeco mines (Cardoso, 2015; Gilbertson, 2021).

The companies operating in La Guajira and Cesar have full control of the administrative, infrastructural and financial operations in their mines, with almost exclusive rights to all the surrounding areas. The Colombian government has little say in the production and administrative decisions related to coal extraction. The effects of coal mining at the extraction sites and more generally, in the two administrative departments are evident. The mining activities have irreversibly affected the waterways, such as the Ranchería River in La Guajira, and other delicate components of this semi-desert area's ecological structure (Banks, 2017).

In March 2020, during the first wave of COVID-19, the Colombian Government introduced several measures to contain the spread of infections, including curtailing freedom of movement in the country (Gobierno de Colombia, 2020). Among these measures, a five-month-long national lockdown prevented most Colombians from doing their informal jobs in the towns and cities, depriving them of their main sources of income (Departamento Nacional de Planeación, 2021). Coal mining operations were also forced to close, although coal mining was among a list of sectors allowed to restart activities as soon as they implemented biosecurity and hygiene measures. As a result, some mines

resumed extraction as early as April 2020 (Drummond, 2020), but coal production remained inactive for several months at some mines, such as Prodeco mines in Cesar. Nevertheless, during the first phases of COVID-19, mining companies in the regions assisted with distributing essential charitable services, such as food banks.

In October 2020, the Colombian government obtained a US\$500 million loan from the World Bank to respond to the crisis (World Bank, 2020). The loan was conditional on introducing and implementing economic and social reforms, including increased investment in public services such as health care, energy and water supply, sanitation, and public transport through the financing of public service companies, and public-private partnerships (PPP). By expanding guarantees, liquidity, and credit lines for Colombian enterprises, the initiatives backed by the loan supported the financial sustainability of essential household services and sustainable infrastructure development. However, several local community groups and organizations criticised the World Bank for failing to demand guarantees to safeguard socio-environmental and health issues.

4. Data analysis and findings

4.1. COVID-19 among Indigenous and Afro-Colombian communities

The content analysis on secondary sources revealed that Indigenous and Afro-Colombian communities in La Guajira and Cesar suffered significantly from COVID-19. Water shortages worsened hygienic conditions, and the local healthcare infrastructure was poorly managed and equipped to cope with the high demand generated by the pandemic (Silva et al., 2020; Weber et al., 2021). Furthermore, the high level of air pollution generated by coal mining activities and poor health infrastructure and service provision made the local population more vulnerable to COVID-19, with an average mortality rate in La Guajira 30% higher than in Colombia. In addition, poor healthcare infrastructure affected vaccination campaigns in the two regions, with Cesar and La Guajira recording the third and fifth-lowest vaccine distribution rates out of Colombia's 32 administrative departments.³

The Colombian national government and local administrations tried to manage the COVID-19 crisis by supporting education and health services, but the existing infrastructure deficiencies and systemic social inequalities in the two regions severed vulnerable populations' access to services. Responses gathered from interviews indicate that government policies implemented to mitigate and recover from the crisis have increased inequalities within local communities. For instance, as home-schooling in rural areas relied on internet access, smartphones (e.g. for sharing teaching and learning content), and computers (e.g. for remote assessments), several children from vulnerable families were completely excluded or significantly limited from educational delivery and related processes. Moreover, many Indigenous children do not speak Spanish as their first language, making the remote education system implemented during the pandemic even more challenging.

Similarly, the health sector faced two simultaneous challenges: increasing costs associated with implementing prevention and containment measures, such as changing shifts of personnel, reducing the number of hospitalised patients per room; while receiving diminishing revenues from non-urgent medical procedures and privately insured patients, mainly mining company workers. During the pandemic, La Guajira had only three primary care hospitals serving a population of nearly one million people. Many vulnerable communities, mostly Indigenous and Afro-Colombian people in rural, hard-to-reach, nearly isolated areas were unable to get any care at all. Moreover, La Guajira hosted about 16,000 Venezuelan migrants which put additional strain

³ Status as of October 2021. Updates available under: <https://herramientas.datos.gov.co/usuarios/tablero-tasa-de-entrega-de-vacunas-contra-el-covid-19-por-departamentos-en-colombia>.

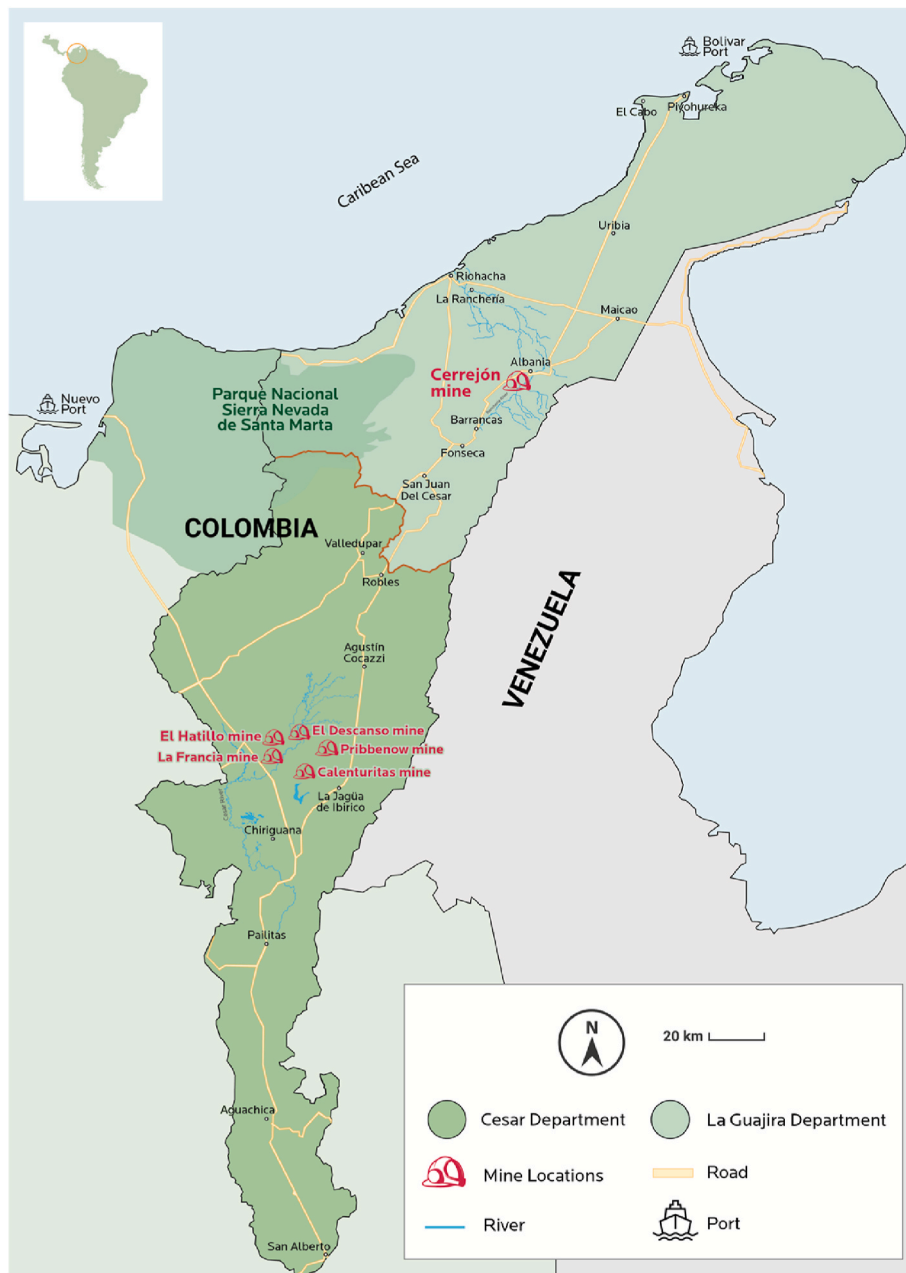


Fig. 1. Areas and sites considered for this study
Source: Author's adaptation.

on an already stretched health system (Human Rights Watch, 2020). In Cesar, following the stop of Prodeco's operations, the situation was even worse, with 62% of households reporting health care as one of their main needs, ahead of employment or income generation (DANE, 2019)., Cesar had already higher rates of unemployment (35%), indebted households (13%), and families in need of food and humanitarian aid (42%) compared to other departments (DANE, 2019).

The COVID-19 outbreak exacerbated these challenges for local communities in the two locations studied in this study. Several interviewees in our study expected the pandemic crisis to be an opportunity for public administration and leadership to pivot towards more resilient approaches after years of neglect. Furthermore, many expected more support from national and local governments for the regions, given the importance of mining. However, responses from the interviews indicate that the aid provided was insufficient:

"I was telling my wife I think that since we live in a municipality where there is open-pit mining, we will not be hit hard by the pandemic, because our mayors and our governors will do something good to not let us suffer any more. All this situation we have lived through ... it was not like that, we hardly received any support by the government" [B2; February 2021]

"The aid provided (two small free grocery deliveries) is not sufficient and did not and does not cause any effect in a family with two or three minor children This cannot be considered a worthwhile help." [HN1; February 2021]

"For 20 years we have been in defense of the water system, the territory of the environment, flora, fauna." ... "before there was mining we lived from agriculture, the fields, rice, all that you can imagine. When they arrive (mining companies) the economy shifted towards

mining. Pure money. Destruction of the environment and rivers and our agricultural tradition” [LJ2 – February 2021]

Following the announcement of Prodecos’s mining rights withdrawal in 2021, local communities in El Cesar, such as the Hatillo Community, were particularly concerned about compensation that the company had agreed to pay for the environmental damage created by their mining operations in the region. Glencore/Prodeco’s concession in Colombia was expected to continue operations for at least five more years. The company justified their departure due to the economic downturn associated with a decline in coal demand due to COVID-19. However, many interviewees saw Glencore’s withdrawal as an attempt to evade environmental and social responsibilities and are concerned about the future of the region where the company was not only a source of employment and fiscal income generation but also played a role in social investment and the provision of public services.

“Our objective is to produce coal in the most cost-efficient and sustainable manner and in turn generate resources for the communities in the areas of influence to achieve sustainable development. We have contributed with almost eight hundred classrooms, ten hospitals and twelve health centres in all the region of our influence area ... we have worked a lot on that infrastructure, which is really a role that the State should have had with the contributions to royalties and taxes that the company has made” [V2– January 2021]

“The companies took advantage of the low coal price and pandemic space and decided to make a decision as a unilateral company to withdraw from the region and abandon in large part, leaving an environmental and labor problem and a terrible mass dismissal and abandonment by the communities.” [C1– February 2021]

“Rather, the mining contract obliges the company to comply with a series of economic, social and environmental commitments. The government cannot let the company go without meeting those obligations [LJ6- February 2021]

“If mining companies leave ... I am concerned about the issue of the schools, if an ally of the territory that has been helping us to fix the schools leaves, then where are we going to get the resources from?” [LV1 – February 2021]

“During the pandemic, when El Cerrejon stopped completely you could see what happens when firms withdraw from the region. The people who sell breakfasts and the community that depends on the company and its workers were totally in crisis.” [V9 – April 2022]

According to some interviewees, the sudden withdrawal of multinational companies from Cesar may also be due to initial court procedures investigating some of their practices. One of the interviewees (an independent consultant for coal companies) explained that the court decision to force Prodeco to move one of their mines’ dumps from areas occupied by the Yukpa Indigenous group could result in massive financial costs for the company due to the additional distance covered by trucks to deposit mine waste in another, more appropriate site. However, given the fiscal revenues and the employment associated with the coal mining sector, the Colombian government might be reluctant to keep mining companies accountable for their environmental and social impacts. This may explain the recent governmental approval for diverting the course of a main stream of the Arroyo Bruno River in La Guajira, which will continue to affect the water supply of many communities in the surrounding area (El [Espectador](#), 2022).

4.2. COVID-19, local community resilience and public services

In the absence of adequate public sector responses, and in the face of the withdrawal of mining companies from the regions, local communities responded to the crisis in multiple ways. Responses from interviews identified several resilience strategies arising among local

communities in response to COVID-19, such as the emergence of community networks for the distribution of food and medical equipment donated during the lockdown, the appearance of solidarity networks associated with community members’ family ties in Colombia and overseas, the re-organization and adaptation of economic activities from the coal mining sector to other activities in high demand during the pandemic (e.g. manufacturing of sanitation gel and face masks), and the activation of micro-credit initiatives and community saving schemes. These strategies enabled local communities to mobilize resources and mitigate the health, economic, and environmental crisis, with residents starting to reorganize their social and economic life in pursuit of resilience. The pandemic crisis provided an incentive for urban populations to move back to the countryside and prompted the revitalization of local environmental knowledge, such as the use of medicinal plants:

“Most of the people in the village of (...) have their farms here. Everyone moved to their farms. Those who had not bought land and had their little savings, bought land and one begins to see that people began to use their land, let’s say, to focus their gaze elsewhere when the mining companies closed”. [LV1 – February 2021]

“Another thing that we have also achieved (during the pandemic) is to recover medicinal plants and if you notice, my garden is all medicinal plants (...) And the good thing about this is that we not only know them, but we also know their uses and customs. As a legacy of our ancestors, the knowledge of medicinal plants is also preserved within the work of each one of us and as a legacy of our ancestors. [LJ2- February 2021]

“We are very happy because next week we will have the launch of our new brand of export-quality coffee (...) we had been relying a lot on the coal companies buying all our production but this year we realized we had to open ourselves to new market opportunities and started with this process of re-launch of our brand”. [LV2 – February 2021]

“Here the energy transition is happening, for example there are many new local wind energy projects. Universities have to open more study programs related to that. The Afro-Colombians and Indigenous people have hope in these projects that are starting in La Guajira and that these will improve their economic situation.” [V9 – April 2022]

The COVID-19 crisis revealed a lack of functional resilience in providing Colombian public services. In the anticipatory, responsive, and readjustment phases, public services such as health care collapsed, although these failures in both function and structure were recognised before the pandemic (Banks, 2017). In Cerrejon, the ‘absentee state’ was replaced by a ‘state-like corporation’, which addressed workers’ and local residents’ working and living conditions when it was in its best interest (Banks, 2017). However, responses show mixed reactions to the impact and effectiveness of “state-like corporations” at the local level:

“But who does this development favor? Not us, because we almost don’t have a health center, we don’t have a decent school, our students don’t have internet, our children, their education is terrible, it is lacking, so we don’t have those opportunities” [HN2 – February 2021]

“With the schools closing, everything that was cultural was taken from the schools, and the children also used to get food in the schools. They ask themselves how all this will be done? Everything is there. I have heard that our president has a fight with the mayoress of Bogota because they want the quarantine to end, and she doesn’t. It is something where whatever that is decided in the Capital will have an immediate impact here in the regions. [VD3 – February 2021]

Many failures in the provision of public services were detected in reviewing measures to protect local communities against environmental damage caused by coal mining activities. COVID-19 worsened the situation, as consultation and consent processes for new mining proposals

were forced to occur via means of online conferences, limiting participation and engagement of Indigenous and Afro-Colombian communities. Responses from interviews indicate that multinational companies operating in the two regions sought and still seek regional resilience through path-dependent adaptations, these seem to be also pursued by the national government and local administrations:

“The monetary poverty in Cesar in 2012 was 51,2%, in 2019, this indicator was still 51%. The exact same number. After almost eight years and around 3 billion pesos in royalties (...) There is a problem in the use of royalties” [V4 – February 2021].

“There is a need for entrepreneurship and sustainability policies for the municipality. We need to focus on a municipality with zero mining and entrepreneurial vision ... What can we do there on that land? Can we use it for tourism? That is the vision we had for that, to create an industrial park where that would attract tourism and through that the municipality would receive income, engineering, it would generate more employment. But we are also aware that in order to make that area the mining companies are going to leave useful again it is also necessary to make considerable investments.” [LJ5– February 2021]

5. Discussion

The analysis presented in the previous section confirms the significant challenges posed by COVID-19 on public sector organizations in countries across the Global South (Bracci and Tallaki, 2021). In Cesar and La Guajira, policies and initiatives launched at both national and local levels did not appear to create an appropriate institutional governance infrastructure able to stimulate resilience in public services. Despite the efforts made by the Colombian government, responses gathered from interviews indicate that the pandemic crisis increased existing structural inequalities within local communities, with Indigenous and Afro-Colombian segments of the communities particularly affected in terms of accessing public services. It appears that policies introduced in these areas somehow failed to mobilize different actors in view of enhancing resilience, as predicted in the literature (see Trump and Linkov, 2020; Kim et al., 2020). At the contrary, some decisions generated unintended consequences such an increasing marginalization among most vulnerable segments of local populations. As a result, the government did not play the role of the ‘entrepreneurial state’ (Mazucato and Kattel, 2020).

Responses gathered from interviews indicate that local communities in La Guajira and Cesar do not directly benefit from the economic activities taking place in their territories. With structural inequalities remaining unaddressed and access to public service is not guaranteed for marginalised communities, new projects of economic diversification in coal-dependent regions, such as the large-scale renewable energy projects currently being built, are likely to face resistance from local populations similar to that opposed to mining projects. Without local sustainable development indicators showing considerable progress, environmental and social objectives associated with these new projects could result in further deepening existing inequalities. These findings corroborate those from Sandoval et al. (2014) and confirm the role of local leaders and localized leadership in developing resilience within communities. In La Guajira and Cesar, an effective linkage between localized leadership and higher-level governmental apparatus, necessary to achieve organizational and community resilience (Hines and Ranaivo, 2020), appears to be heavily affected by the significant involvement of mining companies in the provision of public services. These companies often have distant or antagonistic relationships with local communities due to environmental and social conflicts in the extractive territories, but play a direct (via means of financial support and sponsorships) or indirect (through tax and royalty payment) in the provision of public services.

Our analysis confirm the link between history, pre-existing industrial networks, and institutional structures and adaptation, instead of adaptability, which can facilitate regional resilience (Grabher, 1993). Since the 1960s, several policies introduced by the Colombian government to attract and preserve investments from multinational mining companies aimed to create a resilient region characterised by high-salaried jobs to sustain other industries, such as hospitality and leisure. However, mining activities are also associated with environmental damage which affects workers’ and residents’ health and well-being (Cardoso, 2015). In La Guajira and Cesar, local communities are more exposed to COVID-19 and other health crises due to poorer health systems and sanitation levels than other Colombian regions, particularly those less densely populated by Indigenous and Afro-Colombian communities.

Despite a national and international commitment to withdraw from coal, areas such as the two examined in our study continue to heavily rely on the support of mining companies to limit unemployment rates, provide certain public services, and create local fiscal income required for social and infrastructure investment. However, relying on mining activities with limited forward and backward economic linkages does represent an obstacle to economic renewal toward a fossil-fuel free and diversified economy (Boschma, 2015). In June 2021, the Colombian government announced the approval of new mining concessions in Cesar and La Guajira, which include new coal mining sites (e.g. El Corozo, proposed by Drummond). These plans are likely to increase the economic dependence on traditional extraction models, making the prospect of an economic transition out of coal mining more difficult for the local population. Furthermore, this decision hinders the objectives of achieving regional resilience across coal mining areas as it pursues economic growth building on traditional industrial and institutional settings instead of seeking adaptability and bouncing forward (Boshma, 2015; Gong et al., 2020).

COVID-19 revealed a lack of resilience in services provided by public administration in Colombia, i for marginalised communities such as Indigenous and Afro-Colombian communities in the coal mining areas studied here. As the provision of public services faces more complex problems derived from an increasingly multifaceted economic environment, the pandemic crisis is accelerating socio-ecological damage and therefore necessitating a more robust response in terms of resilience (Turner et al., 2022). As explored in our study, the response provided by the Colombian government failed to foster and facilitate resilience within these communities and even undermined it. The mining companies operating in the two regions analysed provided minimal charitable support in the initial phases of the pandemic crisis. However, local residents and communities deemed these efforts inadequate in relation to their needs and in comparison, with the wealth and resources of the mining companies (González Posso and Barney, 2019). In fact, one of the mining companies unexpectedly withdrew from the Cesar several years before its expiration date, which might have economically further affected the region. The support offered by mining companies was mainly justified by a mutually beneficial, complicit relationship with national and local administrations resulting in ‘regional absenteeism’ rather than serving the communities in which they operate (Silva et al., 2020, 140).

In contrast, the examples of community resilience identified in this study are quite striking. With modest resources, Indigenous and Afro-Colombian communities exploited local and broader networks to address the multiple issues and hardships exacerbated by COVID-19. The resilience within these settings lies in the ability of community members to draw on resources from within the community. In such context, public service resilience seems to be viable in trust-based public administrations, as highlighted by other studies (e.g. Dudau et al., 2020; Acevedo-Duque et al., 2021).

Finally, interview responses emphasised the role of the local community in the co-production of public services and in terms of creating value for their communities (McGranahan, 2015). In La Guajira and

Cesar, these appear chiefly motivated by embedded belief systems and a sense of responsibility for the well-being of both individuals and community, not rooted in any expectation of personal gain (Nowell et al., 2016). As COVID-19 and its effects persist, the sustainability of short-term resilience among these communities is likely to depend on the enduring contribution of informal community networks. Including private sector partners, not necessarily motivated by a sense of community, within these self-organized networks might be counter-productive for ecological resilience, the environment and overall protection of public health. Moreover, the high dependency on coal mining royalties characterising the provision of public services is a key weakness that needs to be addressed to ensure public service resilience. This statement is even more crucial in view of an expected decline in coal mining as the world moves towards more progressive climate policy.

6. Conclusions

This paper investigated the impact of COVID-19 and its effects on marginalised communities in two coal mining regions in Colombia, evaluating this impact in terms of resilience. Using information extracted from primary and secondary sources, and focusing on how Indigenous and Afro-Colombian communities reacted to COVID-19, we examined resilience at the individual and community level and within the public sector. We addressed three research questions, seeking to understand how marginalised communities in two Colombian coal mining regions responded to COVID-19, investigating how public services could enhance resilience among more vulnerable communities such as Indigenous and Afro-Colombian communities, and examining how public services could change and bounce forward after COVID-19 in view of pursuing more resilient solutions.

6.1. Research contributions

The outcomes from our analysis reflect a deep interplay of activities among three agents: government, mining companies, and local communities. The Colombian government's response to COVID-19 took place against a background of inadequate provision of public goods and services. Attempts to address the added stresses brought about by COVID-19 were hasty initiatives, modest in scope and undercut by the significant existing inequalities within Indigenous and Afro-Colombian communities. As a result, the provision of goods and services essentially collapsed, increasing poverty and inequality within the areas considered. A tax reform proposed during the pandemic amplified social tensions, demonstrating that any recovery effort would need to address, and not exacerbate, the significant inequalities affecting Indigenous communities and other disadvantaged societal segments in La Guajira, Cesar, and other administrative regions in Colombia.

The Indigenous and Afro-Colombian communities examined in this study responded to the health and economic crisis resulting from COVID-19 by transforming their land use, reinforcing the positive relationship between individual and ecological resilience. This attitude demonstrated the ability of local communities to adapt and advance by relying on their connection to the land, moving away from economic activities directly or indirectly related to coal mining and local government, towards community-led entrepreneurship and innovation in practical and economic terms. However, the same communities still suffered from inadequate access to services and resources from the government, and remained in desperate need of basic health care and other public services such as education, health and recreation (Henriques and Böhm; 2022). This situation results from years of neglect from the central government, simply exacerbated by the COVID-19 crisis. Achieving a more resilient public sector in these regions will require rebuilding trust within the local communities (González Posso and Barney, 2019). It will take considerable time not just to restore but improve basic public services such as healthcare, education, and a

judicial system able to guarantee the rule of law to establish and maintain resilience. Higher levels of social trust toward the national government and local administrators are necessary to support marginalised communities such as those analysed in our study, particularly in view of limiting the extractivism-based trajectories of the coal mining industry (Boiral et al., 2019).

6.2. Implications for theory and practice

Our analysis has examined the significant role played by multinational mining companies in the provision of public services during COVID-19 in the areas considered. On one hand, the services provided by these companies limited the severe disruption caused by lockdowns and restrictions of movements, giving some relief to local populations, and operating essential functions at a time when local administrations could not effectively operate (Gong et al., 2020). On the other hand, this approach to public service provision reinforced the level of dependence of local communities – particularly marginalised communities – towards multinational companies, creating issues in terms of ecological transition and environmental justice that risk to last well beyond the global pandemic (Weber and Cabras, 2021).

In coal mining regions such as La Guajira and Cesar, findings from this study show that public organizations need to build, cultivate, and strengthen their collaborative ties with Indigenous and Afro-Colombian people to improve public services and increase resilience. The Colombian government should consider how to better fund and support new or ongoing co-development initiatives e.g. increasing the level of control these communities have on local projects, or enhancing their role within decision-making structures at the local level. Such actions would help effectively empower institutions and entrepreneurship initiatives in local communities (Peredo and Anderson, 2006). As demonstrated by this study, the initiatives undertaken by Indigenous and Afro-Colombian communities during the COVID-19 crisis could effectively promote resilience and help to bounce forward from the crisis. Enhancing the role of marginalised communities in the design and development of policies and regulations appears to be crucial in developing community resilience in a post-COVID-19 time.

Our findings also confirm that new inclusive, pluralistic, and co-creational organizational designs are needed to achieve a resilient structure of public services (Dudau et al., 2020). Enhancing anticipatory, responsive, and readjustment resilience by developing, combining, and executing robust governance strategies requires administrative capacity and reform (Acevedo-Duque et al., 2021). Including ideas associated with environmental justice within development and support programmes can help transform the culture of public administration, increasing levels of sustainability and effectiveness in view of responding to future crises. In doing so, and specifically for Colombia, it would be important to consider Indigenous knowledge into adaptation strategies and to encourage respect for traditional knowledge in policy development (Shaffril et al., 2020). Equally, it would be important to rebalance and recalibrate the level of attention devoted by the government to Afro-Colombian communities, enhancing their role and contribution to policies and initiatives at both the national and local level.

6.3. Limitations and future research directions

We acknowledge some limitations in our research study. Firstly, we could not find consistent information from secondary sources to estimate the impact of response strategies implemented by local administrations during COVID-19 and how these affected marginalised communities in the areas considered. This is mainly because local statistics are only available in aggregated level and do not differentiate about residents' ethnic background. The availability of these data would have helped us in evaluating and assessing the effects of an unexpected event such as COVID-19, for instance enabling the

implementation of methods such as Differences-in-Difference (DID) or Propensity Score Matching Differences-in-Difference (PSM- DID), which could have enhanced the quality of our findings even further. Secondly, the information collected from the 35 in-depth interviews provide a wide but limited overview of the themes and issues addressed in our investigation. We tried to increase our sample size; however, our ability to approach interviewees within selected communities was severely hindered by their spatial remoteness, restrictions imposed by limitations of movements during COVID-19 as well as infrastructural deficit (e.g. lack of or poor internet connectivity), and safety concerns. Thirdly, and related to previous comment, while we made an effort to increase the level of representativeness of our sample, we had to rely on local knowledge and partners to arrange interviews. Therefore some bias in selecting interviewees could not be avoided. Nevertheless, the high level of consistency and coherency across responses gathered from local residents, policymakers, and even representatives from coal mining companies, effectively support our main argument, highlighting multiple challenges faced by marginalised communities and linking these with several weaknesses in public services detected at a local level.

Despite these limitations, this study provides a fresh contribution to the literature addressing the impact of COVID-19 on marginalised communities. We hope it can inspire further research on the subject beyond in coal mining regions in Colombia. There remains a paucity of studies analysing the relationship between public services, resilience, and marginalised communities in the context of crisis such as the

COVID-19 pandemic. Our analysis focused on two specific communities, but more studies are needed to better understand the potential of resilient public services to promote social and environmental justice and develop a more sustainable and equitable future for marginalised communities.

CRediT authorship contribution statement

Gabriel Weber: Conceptualization, Writing – original draft, preparation, Literature review, Discussion and Conclusions. **Ignazio Cabras:** Introduction, Methodology, Formal analysis, Discussion of findings, Conclusions. **Ana Maria Peredo:** Literature review, Formal analysis, Discussion of findings, Conclusions. **Paola Yanguas-Parra:** Data collection via means of semi-structured interviews, Formal analysis. **Karla Prime:** Discussion and Conclusions, Writing – review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The data that has been used is confidential.

Appendix 1. Overview of interviewees

Code	Role/domain	Organization	Role	I/ AC*	Place interview	Type of interview**
V1	Academic	National think tank	Analyst		Virtual/online	Informal
V2	Private sector (coal)	Coal mining company	Manager		Virtual/online	Formal
CM1	Institution	Technical Education Institution	Rector		Ciénaga - Magdalena	Informal
C1	Civil Society (coal)	Community coal mining influence area	Resident/Activist	V	Chiriguana - Cesar	Formal
C2	Mixed – public & private sector	Independent consultant	Consultant major's office		Chiriguana - Cesar	Formal
C3	Public sector (regional)	Municipal Council	President		Chiriguana - Cesar	Formal
LV1	Public sector (regional)		Councillor	V	La Victoria - Cesar	Formal
LV2	Private sector (no coal)	Association of entrepreneurs coal mining influence area	Legal representative	V	La Victoria - Cesar	Informal
LV3	Private sector (no coal)	Workers Union	Founding member	V	La Victoria - Cesar	Informal
LV4	Civil Society (no coal)	Community coal mining influence area	Resident/Activist	V	La Victoria - Cesar	Informal
V3	Public sector (coal)	Coal rail company	President		Virtual/online	Formal
V4	Academic	Local think tank	Director		Virtual/online	Formal
LJ1	Workers (coal sector)	Workers Union	General Secretary		La Jagua - Cesar	Formal
LJ2	Civil Society (coal)	Community coal mining influence area	Resident/Activist	V	La Jagua - Cesar	Formal
LJ3	Civil Society (coal)	Community coal mining influence area	Resident/Activist	V	La Jagua - Cesar	Formal
LJ4	Workers (coal sector)	Workers Union	Member		La Jagua - Cesar	Formal
LJ5	Public sector (regional)	Municipal Council	Vicepresident		La Jagua - Cesar	Formal
LJ6	Civil Society (coal)	Community coal mining influence area	Resident/Activist	V	La Jagua - Cesar	Informal
LJ7	Private sector (no coal)	Local hospital	Director		La Jagua - Cesar	Informal
VD1	Private sector (coal)	Coal mining company	Manager		Valledupar	Formal
V5	Academic	Local think tank	Research Analyst		Virtual	Informal
VD2	Mixed - public & private sector	Independent consultant	Consultant - coal companies/ government		Valledupar	Formal
VD3	Mixed - public & private sector	Independent consultant	Consultant - journalist		Valledupar	Formal
VD4	Institution	Local University	Rector		Valledupar	Formal
B1	Civil Society (coal)	Community coal mining influence area	Teacher and entrepreneur	V	Barrancas - La Guajira	Informal
B2	Civil Society (coal)	Community coal mining influence area	Resident/Activist	V	Barrancas - La Guajira	Informal
HN1	Civil Society (coal)	Community coal mining influence area	Resident/Activist	V	Hato Nuevo - La Guajira	Informal
HN2	Civil Society (coal)	Community coal mining influence area	Resident/Activist	V	Hato Nuevo - La Guajira	Formal
R1	Public sector (regional)	Local Commerce Chamber	Director		Riohacha - La Guajira	Formal
V6	Workers (coal sector)	Workers Union	Member		Virtual/online	Formal
V7	Public sector (national)	National Planning Department	Analyst		Virtual/online	Formal
V8	Public sector (national)	National Mining and Energy Planning Unit	Analyst		Virtual/online	Formal
V9	Media	Regional Newspaper	Journalist	V	Virtual/online	Formal

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(continued)

Code	Role/domain	Organization	Role	I/ AC*	Place interview	Type of interview**
BM1	Private sector (no coal)	Lawyers collective	Lawyer		Banamera - Magdalena	Informal
BM2	Public sector (regional)	Municipal Council	Councillor	V	Banamera - Magdalena	Informal

*Whether the interviewee comes from an Indigenous or Afro-Colombian background.

**Formal interviews were arranged with interviewees, with a list of questions provided to them in advance.

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