

Gender in oil, gas and mining: An overview of the global state-of-play



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ABSTRACT

This special section of the *Extractive Industries and Society* brings together a collection of papers on gender and the extractive industries. These papers were developed from presentations delivered at the international conference, *Gender in Oil, Gas and Mining: New Frontiers of Progress, Challenges and Solutions*, held at World Bank headquarters in Washington DC, June 2018. The section presents work which seeks to address gender gaps in oil, gas and mining. It includes papers that examine gender in the context of the Extractives Industries Transparency Initiative (EITI); traceability schemes for tin, tantalum and tungsten (otherwise known as the “3Ts”) and gold; and national policies on extractives.

1. Introduction

In June 2018, the World Bank Group hosted its first global gender in the extractives conference. The event, *Gender in Oil, Gas and Mining: New Frontiers of Progress, Challenges and Solutions*, was exceptional, not only because of the range of participants involved and breadth of topics covered but more so because the World Bank Group had never hosted an international event which explored progress made on gender equality in the extractive industries. This is surprising, considering that since the mid-2000s, the World Bank Group and the International Finance Corporation in particular have provided dedicated assistance to governments, civil society and the private sector to address gender gaps in oil, gas and mining jurisdictions.

The conference's objective was straightforward: to celebrate success made towards closing the gender gaps in the extractive industries, and to take stock of the remaining challenges. The World Bank Group's *Gender Strategy*, adopted in 2016, was at the core of the conference program. Over the course of two days, more than 150 participants from across the globe convened in the World Bank Group's Washington DC premises. Each day opened with lively plenaries, followed by parallel breakout sessions in the morning and the afternoon. In total, 41 presentations were delivered by practitioners alongside two keynote speakers and six plenary panelists. In between sessions, men and women gathered in the halls to network. Participants were invited to capture their impressions on camera, summarized in the conference's final [video](#).

This special section of the *Extractive Industries and Society* brings together a selection of papers presented at this conference. The collection seeks to close gender gaps in oil, gas and mining. It includes papers that examine gender in the context of the Extractives Industries Transparency Initiative (EITI); traceability schemes for tin, tantalum and tungsten (otherwise known as the “3Ts”) and gold; and national policies on resource extraction. The papers draw on experiences from around the globe, revealing the commonalities facing women's progress

in the extractive industries while simultaneously highlighting geographic differences.

This introductory paper opens with a description and analysis of the current state-of-play of gender in oil, gas and mining. First, we describe the framework for understanding and organizing the issues facing women's progress in these industries, and then illustrate by way of quantitative and qualitative data the state of gender gaps. Second, we bring together data from national statistics offices and other sources to provide a picture of women's participation in the oil, gas, and mining sectors. Third, we discuss barriers to women's participation in the extractives industries.

2. A framework for identifying and analyzing gender gaps in the extractive industries

The World Bank's *Gender Strategy* is the key instrument through which the institution frames, operationalizes and measures its contribution to gender equality at a global scale. It centers on four pillars which organize delivery of the institution's assistance to clients ([Fig. 1](#)).

Briefly, the evidence shows that greater gender equality in education and employment stimulates long-term per capita growth. Removing barriers that prevent women from having the same access as men to education, economic opportunities, and productive inputs can generate broad productivity gains. Improving women's absolute and relative status facilitates many other development outcomes, including those for their children. A growing body of evidence indicates that increasing women's economic opportunities leads to higher rates of family savings; spurs greater spending on family nutrition, health, and girls' education; and decreases household poverty.

But despite considerable progress made to close global development gender gaps, critical challenges remain, including in the areas of access to employment, ownership of assets, and voice and agency. Indeed, women remain 36% more likely to be unemployed in Low Income Countries, and 14% in Middle Income Countries. Globally, women are

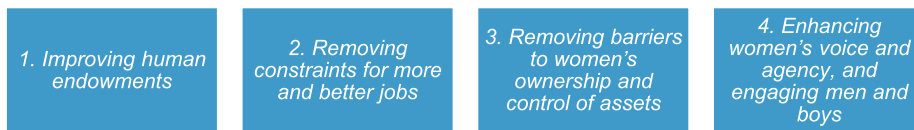


Fig. 1. The four pillars of the World Bank Group's Gender Strategy, 2016–2023.

Source: World Bank Group.

Source: World Bank Group Gender Strategy.

less likely to work full-time and when they do, they earn 10–30% less worldwide. Access to finance presents a critical barrier to equal development. For instance, female formal small business owners face a US \$300 billion credit gap. Additionally, in the area of voice and agency, women continue to be underrepresented in the highest levels of decision-making and face pervasive gender-based violence. Women hold only 25% of national parliament seats worldwide as of 2020 and—despite that 155 countries have enacted domestic violence laws as of 2019—one in three women globally still faces physical or sexual intimate partner violence (IPU 2020 and World Bank Group 2020). All of these challenges are of relevance to debates on gender in the extractives industries, where women and men generally have very different experiences. An analysis of these experiences reveals several key areas which must be prioritized.

The first is *improving human endowments*, which encompasses a range of topics related to health, education and social protection. Health and safety policies in extractives industries' environments are critical to ensuring the protection of workforces and mitigating negative human and environmental impacts in adjacent communities. Though industrial oil, gas and mining operations typically adhere to international best practices, their management may still overlook gendered impacts. Consider, for example, the gendered impact of hazardous substances on women's reproductive health, or air pollution from gas flaring near oil pipelines. The influx of temporary workers into project areas can further lead to higher transmission rates of HIV/AIDS and sexually transmitted diseases. At artisanal and small-scale mining (ASM) operations, exposure to basic health and safety risks is higher due to the informal, often unregulated nature of the work. Economic discrimination of women in ASM often leads them to undertake the most arduous jobs at a site, such as heavy lifting of ore, which has been known to cause significant spinal injuries. Other health concerns include exposure to mercury or contaminated waters. Specifically, at artisanal gold mine sites where women and men are in contact with mercury to process ore in confined spaces with poor ventilation, or salt or base metal mining activities where they spend considerable amounts of time in polluted waters washing and sorting minerals without protective equipment. Whereas globally, the gap between boys and girls on access to education has decreased, it remains pervasive in poorer communities, and not uncommonly, in ASM areas. Boys and girls alike may abandon education in favor of economic opportunities at mines. Furthermore, girls, from an early age, need to be encouraged to pursue education in the fields of science, technology, engineering and mathematics (STEM).

The second, *removing constraints for more and better jobs*, considers the manner in which women lag behind men in employment opportunity and pay. Depending on the lifecycle of an oil, gas or mining operation, different categories of jobs are created (in exploration, construction, development or production), which are often gender-segregated (men for construction and machine operations; women in administration, cleaning or catering). For women to access more and better jobs in the extractive industries, the gender gap in earnings, which is largely attributable to education, would need to be addressed. For instance, women make up less than 30% of the skilled labor force in the mining sector as these types of jobs often require higher education. Women's underrepresentation in the professional positions is closely linked to their low representation in fields of study such as STEM. Cultural norms also affect women's entry into STEM-related fields of study and eventual work. Even if women were to qualify for jobs in the

extractives industries, a lack of essential workplace policies (childcare, maternity leave, flexible rotations and work schedules and sexual harassment policies) may further curtail their participation. In addition, women's participation in supply chains linked to extractive industries is low: in emerging markets, they currently control approximately one third of SMEs. At the executive and leadership levels, the gender gaps are even more sizable. Take, for example, the mining industry, which has only 5% female representation on the boards of the top 500 global listed companies (PwC, 2013). In addition, only 16 of the top 100 mining companies and less than 8% of the top 101 – 500 mining companies have more than one female director. Evidence from mining operations in several countries indicates that as employees, women adhere more rigidly to environmental and health and safety practices. The management of mining companies in countries such as Chile, Ghana, and Papua New Guinea have discovered that women operate heavy mining equipment (such as large trucks and shovels) more efficiently than men. But in these, and other, cases where women have shown that they do jobs more effectively than men, discrimination can be even more widespread and directly impacts the company's bottom line.

The evidence suggests that this bias is not restricted to the private sector. A recent analysis (Hailu, 2015) of differences between women and men in government leadership positions found that in countries with a high dependence on extractives, women make up 8.7% of ministerial-level positions and occupy 9.5% of seats in national parliaments; conversely, in countries with a low dependence on extractives, the numbers almost double to 16.9% for ministerial-level positions and 17.9% of seats in national parliaments.

Such gender gaps apply equally to the informal ASM economies. Despite accounting for over 40% of the global ASM labor force, women earn typically a third of the value earned by their male counterparts. These women must be provided with the financial autonomy needed to make smart decisions about their work and families. This may require implementing financial inclusion programs to put them in a position to improve their standing in mine sites; or, it may involve business development outside of the mine.

The third, *removing barriers to women's ownership and control of assets*, concerns the legal barriers women face with respect to public and private financial and other forms of tenured security. Access to finance is a major barrier that inhibits women's involvement in company supply chains. Many women-led, community-based SMEs trying to enter supply chains are typically low-profit investments with limited assets and capital, which makes it difficult for them to obtain finance. It also makes them high-risk and vulnerable to market variability. Compensation may often be paid to men or male heads of households on behalf of their families, but it may never reach the women, therefore perpetuating their economic dependence on men. Since women often are not the legal owners of the land they use, and have different economic roles than men, livelihood restoration and resettlement programs risk overlooking women's roles and needs, consequently making them more vulnerable than they were before the project began.

The fourth, *enhancing women's voice and agency, and engaging men and boys*, concerns the ways in which power and social norms shape gender in the extractive industries. Large-scale oil, gas and mining projects affect women and men differently. Women continue to bear the brunt of negative impacts of these projects globally. Two ways of decreasing these impacts while increasing benefits for women is voice and agency. Through work with clients, voice and agency translate into

practical actions such as assurance of women's participation in consultations and decision-making processes related to specific projects in the extractive industries. However, it can also lead to an increase in women's voices more broadly in society through organized movements (associations, unions, federations) that bring individuals together to amplify otherwise isolated concerns. Women's exclusion from various forms of consultation is not only linked to gender and cultural norms in specific societies but equally due to overlooking the constraints they face in reconciling public engagement with their household responsibilities. Indeed, consideration of such seemingly small things (such as providing ample notice for invitations to meeting, offering meeting times that consider travel distances and household responsibilities, the provision of childcare, or safe modes of transportation) can greatly increase women's participation in consultations and decision-making forums. Even within female constituencies, differences in age, ethnicity, religion, and economic standing influence who (out of a female cohort) participate. As women's participation and voice increase, it is likely that men's position in the extractive industries, and society more broadly, will begin to be scrutinized. Engaging men and boys, therefore, is critical to preventing gender-based violence (GBV). This can manifest in many ways: from domestic violence through sexual violence to economic discrimination. For instance, as women enter the workforce they may face sexual intimidation, harassment and violence, particularly in mining camps and underground mines, as revealed in several countries. It can intensify following a temporary influx of male workers to project areas during construction, or in the case of artisanal mining, 'rushes.'

Evidently, the various conceptual elements raised here manifest themselves quite differently across regions, types of operations and minerals. In order to appreciate the scale and depth of challenges facing women in the extractive industries, and to understand this in relation to broader gender gaps in development, the next section describes in detail the issues raised under each of the four categories mentioned above and highlights the role data play in establishing common understandings of policy priorities, and the means with which to monitor them.

3. The global state-of-play of gender in oil, gas and mining: what do the data tell us?

3.1. Methodological challenges

The importance of quality, gender-disaggregated data cannot be understated. Good-quality data can lead to better-informed decision-making. When it comes to the extractive industries, statistics on a variety of challenges facing men and women are not universally available, reliable or comparable. This can lead to the drafting and implementation of inappropriate policies and programs, and an underreporting of activities' impact. During the course of the *Gender in Oil, Gas and Mining: New Frontiers of Progress, Challenges and Solutions* conference, the debate on the need for quality data was at the fore: participants could not agree whether progress on closing the gender gaps in the extractive industries had indeed been made in recent decades due to the sparsity of data.

In general, five methodological challenges associated with establishing an understanding and addressing of gender gaps in the extractive industries are observed. First, while some governments and companies do report disaggregated numbers on employment, there are few datasets aggregated (or collected) at the global level. Participation of men and women vary by region, mineral, type of work performed, year and level of formality. Second, there is the expansive nature (and therefore definitions) applied to extractives – i.e., oil, gas and mining. The third is the job composition of the sector, which leads to a variety of functions performed. Fourth, there is the degree of informality. There is a common line drawn across the extractive industries in the data between large-scale industrial activity and mostly-informal ASM activity. This pertains almost exclusively to mining, though some

'informal' or 'artisanal' oil operations have been observed to exist in Nigeria, for instance. Fifth, there is the real possibility that the data that may exist already are outdated. For instance, the number of people engaged in ASM alone is estimated to have more than tripled between 1999 and 2017.¹ Or, consider the recent technological advances in industrial oil, gas and mining operations, which are rapidly reducing workforces globally. Indeed, women's participation may look very different today than it did 20–30 years ago.

Take the challenge of arriving at a clear understanding of the gender gap in the global mining sector, for example. A range of questions confront researchers, in particular do statistics reflect both large-scale mining and ASM? This is important to consider as industrial mining employs an estimated seven million people globally (2013 figures), with an average of only 14% female participation rate, whereas ASM employs 40.5 million people (World Bank, 2019) with ranges from 40 to 90% female participation on a regional basis. Given that 90% of the world's mining workforce is comprised of individuals engaged in artisanal and small-scale activities, this distinction is important. Which jobs within the value-chain are included in these statistics (diggers, geologists, administrative assistants, board members, water fetchers, cooks, sex workers and traders), and what types of minerals do the data refer to (coal, copper, gold, mica or diamonds)?

Regardless of the type of extractive or the region, of the data that are available, one thing is clear: that women have fewer economic opportunities than men.

3.2. Women's participation in the industrial oil and gas, and mining sectors

The female labor force participation rate in the industrial oil and gas, and mining sectors is persistently low across the world. Today, women account for 22% of oil and gas industry employment (BCG and WPC, 2017) globally, whereas in mining, according to the International Finance Corporation, they make up even less (14%) of the workforce. This places extractives at the bottom of industry rankings, second only to construction, where the female participation rate is 11% (BCG and WPC, 2017).² For mining, national statistics show that in many jurisdictions, women's formal labor participation is significantly lower than the global average (Fig. 2). Moreover, even in countries where it is higher than average, the numbers alone do not show that women remain significantly underrepresented in the most lucrative and profitable roles. Indeed, women typically receive on average 40% less than their male counterparts, placing this gender earnings gap on par with findings from gender earnings gap calculations made by the United Nations Development Program in 50 countries (UNDP, 2020).

Several governments have recently reported very slight increases in women's participation in mining. In Chile, for example, women's labor force participation was up from 5.2% in 2007 to 8.1% in 2017 (Chile Consejo Minero, 2019). In South Africa, the number of women working in the mining sector more than quadrupled between 2002 and 2018.³ Mexico reported a 3% increase in women's participation between 2010 and 2016. In Peru, women account for 6.9% of mining workforce, up from 5.1% in 2009, and Canada reported that women made up 17% of the mining industry in 2015, up from 10% in 2001.

But as argued in the preceding section, closing gender gaps in the extractive industries entails more than simply increasing women's total share of the workforce. It also requires removing the constraints for

¹ An estimated 40.5 million people were directly engaged in ASM in 2017, up from 30 million in 2014, 13 million in 1999 and 6 million in 1993. See State of the Artisanal and Small-Scale Mining Sector Report, World Bank Group 2019.

² The 2018 numbers show that the industry has the second-largest median gender pay gap in the UK at 24.9%. Construction comes first at 27%. See www.forbes.com/sites/woodmackenzie/2019/05/24/why-the-mining-industry-needs-more-women/#dfb9cfe585cb.

³ That is from 11,400 to 54,154. See Minerals Council South Africa, 2018.

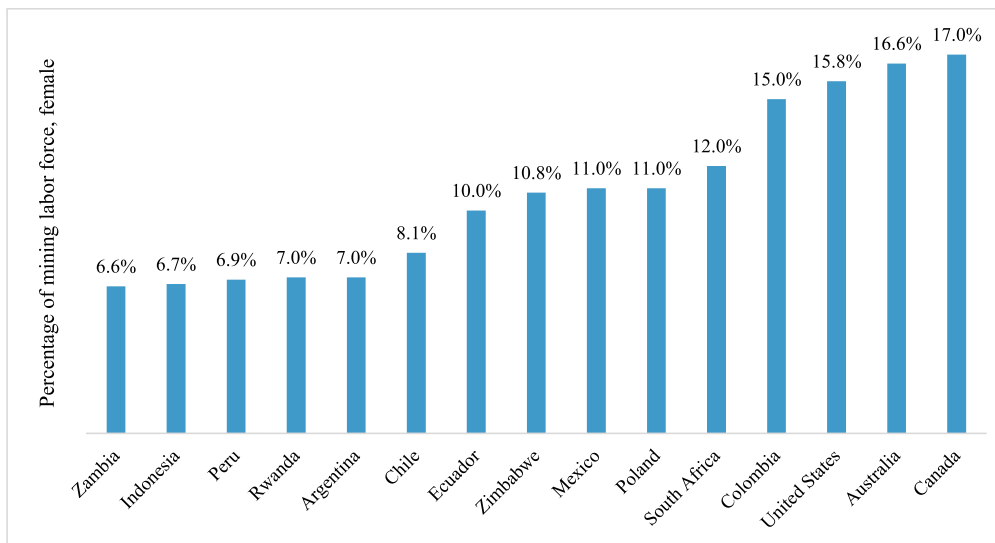


Fig. 2. Snapshot of Women's participation in large-scale mining.

Sources: Zambia Central Statistical Office, 2017; Indonesia Central Agency on Statistics, 2016; Peru Ministry of Energy and Mining, 2018; Rwanda National Institute of Statistics, 2019; Argentina National Institute of Statistics and Censuses, 2016; Ecuador Ministry of Energy and Non-Renewable Natural Resources, 2018; Zimbabwe National Statistics Agency, 2014; Mexico National Institute of Statistics and Geography, 2016; Poland Central Statistics Office, 2017; South Africa Minerals Council South Africa, 2018; Chile Ministry of Mining, 2017; Colombian Mining Association, 2018; United States Bureau of Labor Statics, 2019; Australian Bureau of Statistics, 2019; Canada Mining Industry Human Resources Council, 2015

women with a view to positioning them to access better-paying jobs. Women experience both vertical and horizontal sex-segregation in the extractive industries (Tallichet 2000). For example, in Canada—a country with one of the highest rates female participation in mining in the world, as the data presented above show—women are mostly employed in *finance, human resources and administration*, representing a mere 5% of workers at the mine site level. Worth noting is that technical mine site jobs—engineers, geologists, analysts—are higher-paying than the clerical or administrative functions, where women typically congregate. In Chile, the same dynamics persist. Here, the Ministry of Mines reports women's participation in the sector as follows: 20% are geologists, 27% are professionals, 26.2% as administrative support, 19.5% are operators and are 10.1% analysts. Similarly, in Peru, data show that where women are working in mining, nearly half (49%) are employed in administrative positions, while only 30% work in general operations and 17% work as plant personnel. In a location such as Mongolia, women work mostly in service support in the mining sector (Khan et al., 2013). In the oil and gas industry, it is much of the same. Here, women hold only 10–30% of technical or field jobs (BCG and WPC, 2017). In each of these, and other, cases, the evidence shows that closing gender gaps will demand the implementation of more dynamic educational policies at the secondary and tertiary levels.

But when women enter the sector in professionalized roles, the gender gap is often even more sizable. In *Kazakhstan*, only 11.6% of chief executives of mining companies are women, and in *South Africa*, they make up just 17% of senior management and 16% of top management. In South America, the gap is even wider, with Chile reporting that 9.4% of women who participate in the mining industry are in management positions, and Peru even less, at 4%. A similar widening of the gap has been observed in the oil and gas industry. Boston Consulting Group and the World Petroleum Council report that women's labor participation rate falls sharply—from 25% to 17%—between middle management and senior-leadership career stages (BCG and WPC, 2017).

In summary, whereas data may show an overall reduction in the general gender gap found in labor force participation in the extractive industries, when unpacked, they tell very different stories. Women are entering in slightly greater numbers in the oil, gas and mining sectors than a decade ago but they continue to congregate into less-skilled and lower paying jobs. One of the policy solutions applied—that of STEM—has proved to be an important catalyst for increasing entry-level participation into professional streams. But the widening of the gender gap beginning mid-career suggests that it will take more than just education to achieve equality in this context. The tapering off of

personal and professional progress for women in the extractive industries reflects a debate in the wider literature on basic versus enhanced capabilities, as discussed in the context of general progress towards achieving gender equality (UNDP, 2020). We now explore the role that social norms and workplace policies play in both pushing women up the extractives career ladder, or in keeping them where they are. But before we do so, we examine women's participation in the informal mining sector.

3.3. Women's participation in ASM

Of the more than 40 million individuals (World Bank, 2019) engaged in ASM around the world, an estimated 30% are women,⁴ though the exact percentage can vary greatly depending on what jobs in the value-chain, the type of mineral, country and region are considered. In Africa, women's participation is the highest, constituting an estimated 40 to 50% of the ASM workforce (AMDC, 2015). In some ASM economies, women make up upwards of 90% of the labor force. Much of the data available on women's participation in ASM, however, is approaching 20 years old. But the numbers are still relevant in that they highlight how women's participation in the sector tends to be significantly larger than in industrial mining (Fig. 3).

It is important to recognize the limits of the data: for some countries, estimates can vary and it is unclear how comprehensive it really is. In Zimbabwe, for example, estimates from the early-2000s put women's participation in the ASM sector at 50%; yet, the most recent report published by *Zimbabwe's National Statistics Agency in 2014* indicates that only 19.9% of the informal mining sector's participants are women. Generally speaking, differences in data can be explained by multiple factors, including challenges with collecting information linked to the informal sector, regional variation, and discrepancies between sources. In India, for example, it was estimated that only 7% of the ASM sector was comprised of women in 1997/1998 (Chakravorty, 2001); however, other studies from a similar time period placed women's participation at 12% and 30%. Lahiri-Dutt (2005) examines some of the data on women's participation in ASM in India, explaining that the wide-ranging differences may be due to variations in India's regions and minerals. Moreover, the ASM sector has been growing rapidly in some regions, with increases in women's participation being more recent developments that potentially have not yet been captured.

⁴ According to Delve, 41,477,296 people globally are working in ASM. Thirty percent of these are women.

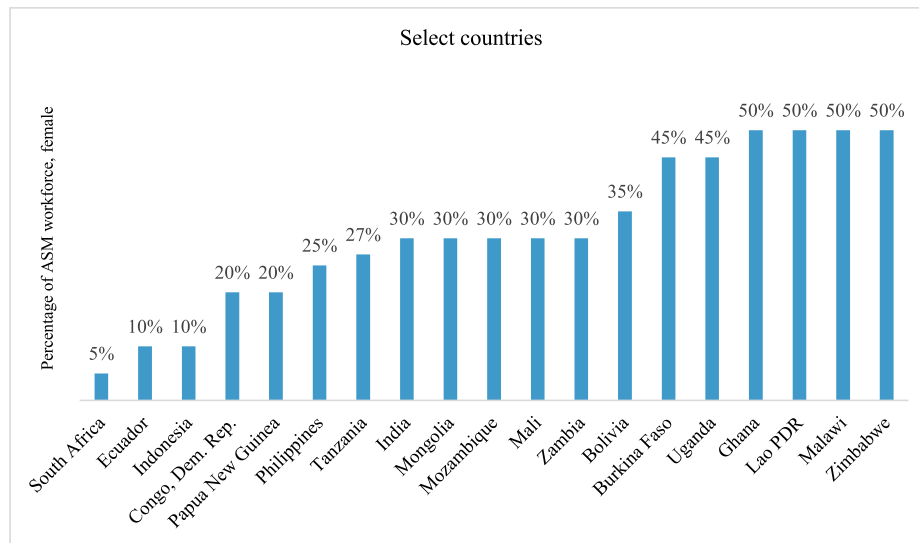


Fig. 3. Snapshot of Women's participation in artisanal and small-scale mining.

Sources: World Bank, 2012; Hinton et al., 2003; Hentschel et al., 2002. The following sources were also consulted: Tanzania Ministry of Energy and Minerals (2012).

Women engaged in ASM undertake a range of tasks, including digging, panning, processing, transporting, hauling, setting up trading stalls, cooking and cleaning. But as is the case in large-scale mining, women and men in ASM tend to be segregated into different jobs. As indicated earlier, women tend to be concentrated in the lower-valued, lower-paying jobs. A study in Sierra Leone's gold mines found that almost all gold buyers are men (Rutherford, 2018). In Ghana, women engaged in processing and hauling roles reportedly earn 60% less than men employed as diggers. Research conducted in Kenya found that women in the country's ASM sector yield only 11% of the revenue share, despite accounting for 38% of the workforce (PACT Global UK and ARM 2018). In Guinea, 80% of profits derived from women's labor in washing gold from lateritic soil goes to intermediary male buyers (IGF 2018; Eftimie et al., 2012). In certain mines in Eastern Democratic Republic of Congo, women earn only one third of that of their male counterparts (World Bank, 2015). In other regions of the world, the trends are similar. Yet, there are women who have succeeded in climbing their way out of less-remunerated roles. As explained by Hinton, in some regions of Colombia, for example, women have been owners-operators of mine operations and processing shops (Hinton et al., 2003). As discussed in the paper by Lahiri-Dutt and Lawson in this issue, women gemstone traders in Madagascar are increasing in number.

In sum, women's participation in ASM diverges from large-scale mining in some respects—especially in the sheer number of women engaged—but is similar in that women remain in jobs that are paid and valued less than the jobs men tend to do. The nature of the informal sector explains the higher numbers of female participation. As explored in the subsequent sections, and as exemplified in several of the papers in this special section, the focus should be on how to bridge important gender gaps with respect to decent work, human capital and voice and agency.

4. Barriers to participation: what is at the heart of the gender gap?

4.1. Legal discrimination

The opening paper in this special section, by Kuntala Lahiri-Dutt, examines one important legislative barrier to women's employment in the mining sector, drawing on historical evidence. The author explores how discriminatory legislation can, over centuries, create both legal but cultural barriers to women's contemporary participation in the industrial mining sector. The paper builds this argument carefully

through a case study of the *Mines and Collieries Act* of 1842. It is a moving account of the powerful effect national legislation had in removing women from the coal face of British underground mines in the late-1800s. More revelatory is how this small act dramatically altered the global landscape for women's participation in mining, as a moral expression of social disapproval of women's dirty work in the mines during Victorian times would spiral outwards to take hold in Britain's colonies. Countries across the globe followed suit, bolstered by the decision of the International Labor Organization (ILO) to adopt a specific convention calling on member states to completely ban women's underground work. Ninety-eight have countries ratified this Convention since its adoption in 1935. Women's labor in the mining sector—that is, women who previously had worked side-by-side with men, mainly in coal and gold mining around the world—came to a halt. Today, 60 countries, representing every region in the world, still have laws on the books that ban or restrict women's employment in mining. While almost every country in Latin America has lifted these bans, over one-third of countries in sub-Saharan Africa legally shut women out of mines or limit the work they can do (World Bank Group, 2020).

Some countries have also prohibited women from working in certain jobs in the oil and gas industry (World Bank Group, 2020). Vietnam, for example, does not permit women to participate in work linked to the exploratory drilling of oil and gas wells, the installation of offshore oil rigs and on in oil rigs at sea. In Kazakhstan and Kyrgyz Republic, legislation bars women from work linked to the processing of oil and gas, shale and coal. Other forms of “protective legislation” also play a role in keeping women out of the extractive industries. These include bans on women from working at night, general prohibitions on employing women in “dangerous” or “arduous” jobs, bans on operating or driving certain types of industrial machinery and strict limits on the amount of weight women can transport or carry. Personal testimonies at the conference reinforced these restrictive practices as found in the literature.

Labor legislation can also be a barrier for women when it does not ensure adequate maternity leave, prohibit sexual harassment, and mandate equal pay for work of equal value, as well as does little to protect women from discrimination. Further, labor legislation can mandate employers at large-scale mines to provide separate changing facilities or bathrooms for women, as well as establish occupational health and safety measures that are gender-sensitive.

In ASM, the legal barriers are different. Discriminatory family, property and inheritance laws that affect women's control over land and access to finance are often cited as key constraints. Unequal inheritance

rights, for instance, may mean that women do not have collateral for loans needed for a mining license, mine equipment or technology. Similarly, laws that give husbands administrative rights over property can impede a woman's ability to sell or rent land for mining. Today, approximately 40% of countries limit women's property rights. In sub-Saharan Africa, which boasts one of the largest ASM sectors in the world, two-thirds of countries limit women's property rights (World Bank Group, 2020).

4.2. Social norms and discriminatory practices

Whereas several leading mining jurisdictions have since removed the ban on women's presence underground, over a century of male-only mine labor had enshrined a culture with its associated norms underground and in the boardroom. The shortage of women on corporate boards in Australia, for instance, has been partly attributed to the fact that women were not allowed to work underground until the 1960s, which explains why there are currently very few women of board age (between 50 and 65 years of age) in the mining industry (PWC, 2013).

Discrimination is rampant in the extractives industries, and is often tied to gender roles. Pregnancy, maternity and caretaking responsibilities make it more difficult for women than for men to keep up with the demands of the mining sector: working at remote work sites, unsociable work hours and overtime, often with few childcare options (BSR, 2017). This applies to ASM as well. In one study of ASM in east and central Africa, 33% of women reported family obligations as a major factor influencing their work hours, compared to only 14% of men (GrOW, 2017). In instances where women do manage to overcome the obstacles associated with being a mother and working in the extractive industries, they often find that discrimination is entrenched, even in the tools of the trade. Safety gear, mining equipment and sanitary facilities are not designed for women, presenting yet another obstacle to women's equal participation (BSR, 2017).

Apart from their gender roles, negative stereotypes and attitudes about women are common obstacles. From the mining shafts of Bolivia to the underground tunnels of Tanzania, an almost global superstition persists that women will bring bad luck if they enter the mines. Combine this commonly-held belief with general negative attitudes about women working alongside men in mines and it is easy to see why they feel unwelcomed (BSR, 2017). Women are often stereotyped as “too weak” or are quickly rumored to have a “bad reputation” for working in mines. The second paper in this special section, by Martin Kaggwa, looks at these difficulties in the location of one of the world's oldest and most dynamic mining sectors: South Africa. Through empirical research and analysis of secondary literature, the author demonstrates just how difficult it is to root out discriminatory and violent practices against the industry's contemporary female underground miners, largely as a result of the social norms built up over the last century. The paper furthermore provides a clear, and at times, stark, rationale for companies to double down on the types of actions exemplified during the conference: girls STEM education, parental leave policies, and corporate sponsorship programs for female leaders.

What is it like for women in ASM who experience such discrimination? Linda Lawson and Kuntala Lahiri-Dutt team up to narrate the lives of female gemstone miners and traders in Madagascar. Using life histories as the principal method of data collection, we ‘hear’ in their own words what life in gem mining is really like for a Malagasy woman. The findings are universal in nature, further reinforcing what we know about discrimination against women in ASM: the sexual predation and violence, the dismal returns compared to male colleagues, and the significant cultural barriers to entry, to name but a few.⁵

⁵ See, for instance, the research of the World Bank and Harvard Humanitarian Initiative, conducted in Eastern Democratic Republic of Congo (World Bank 2016).

4.3. Education and training

Adequate education and training are critical for women working in the extractive industries. Yet, most continue to be denied access to learning opportunities across the globe. To work in some of the most lucrative roles in the more capital-intensive, formal segments of these industries, higher education is often essential. But as indicated, women are generally underrepresented in STEM fields for a variety of reasons, including powerful stereotypes surrounding women's math and science abilities. In China, where women are still legally barred from working underground, they are disallowed from studying mining in university despite the efforts of student activists. In Ghana, only 15–20% of students enrolled in its University of Mines and Technology are women (Fredua-Kwarteng and Effah, 2017). At the Colorado School of Mines, 29.7% of the student body in the 2018/2019 were women. In Chile, in 2017, 22.4% of students who studied civil engineering in mining and 38.8% of students in geology programs were women. Even where women are pursuing higher education in STEM or mining, they may not be afforded the same opportunities as men following graduation. A 2019 study in Poland found that women who have pursued higher education in the field of mining were not likely to find a job in this profession (Pactwa, 2019). In the oil and gas industry, the number is quite similar. According to BCG and the World Petroleum Council, women make up 27% of the entry level positions in the industry (BCG and WPC, 2017).

Education and training are important for women in ASM as well. The vast majority of women in the sector have little education and/or are illiterate, making them more prone to exploitation and discrimination (IGF 2018). Learning basic literacy and accounting skills, how to safely process minerals, how to submit license applications, and the value of minerals would therefore benefit women engaged in ASM greatly; but such learning opportunities are often out of reach. They also do not have the on-the-job training that many men do from working in large-scale mines, one factor affecting women's concentration in subordinate or subsistence work in the ASM sectors (Hinton et al., 2003). Moreover, in some ASM communities where children regularly work alongside their parents, girls may be kept out of school to assist with mining. This perpetuates a cycle in mining communities whereby women have few opportunities to obtain better work.

4.4. Gender-based violence and sexual harassment

A recent article called Chile's extractives sector “notoriously inhospitable” to women, citing a 2016 Ministry of Mining survey that found that 40% of women in the mining sector had been sexually harassed and 20% had been groped. A BBC News headline reads: “South Africa rape: ‘Shocking’ levels of violence in mining area.” A Canadian survey found that almost one-third of women in mining have experienced harassment, bullying or violence in their workplace in the last five years.

Gender-based violence and sexual harassment are prevalent in the mining industry, often attributed to its ‘highly-masculinized’ culture. The remote, informal, often illegal and precarious nature of ASM is often linked with an increased risk of gender-based violence. This includes sexual, physical, psychological and economic violence (Hinton et al., 2003). A 2016 study conducted in the Democratic Republic of Congo, for instance, reinforces this, finding that women living close to ASM sites are indeed more likely to experience sexual violence (Rustad, Østby and Nordås, 2016). Similarly, in Peru, some mining camps are characterized by high crime rates, domestic violence and incidences of rape (Eftimie et al., 2012). Other factors also play a role in increasing the risk, including the influx of migrant workers (high concentration of men without social ties to the community), higher rates of female employment in prostitution and tendencies towards in

alcoholism and drug use (Hinton et al., 2003). The lack of security, law enforcement and general lawlessness also can contribute to the prevalence of violence against women.

Industry has been making strides in the last few years. Notably, Rio Tinto partnered with White Ribbon Canada to put in place the most progressive policy to date on the prevention of workplace harassment and gender-based violence. At the conference, we heard from Rio Tinto's efforts to change social norms in this regard across the company and in the communities where they operate, alongside the significant work pioneered in White Ribbon Australia to establish an accreditation system for the largest mining companies on prevention of sexual and gender-based violence. It is anticipated that these types of programs will become the norm in the next decade.

5. Progress and solutions

During the conference, leading mining, oil and gas companies discussed frankly on corporate strategies to achieve equity—mentoring and sponsorship programs, enforcing diversity targets at the executive level, paid parental leave, and sexual harassment and gender-based violence prevention programs. A range of solutions came to the fore which are noteworthy. Participating companies conceded that progress in bridging specific corporate gender gaps has been extremely slow. Cultural barriers and company norms were often cited as the prime barriers to corporate uptake of many of these programs. Apart from private sector initiatives to achieve equality in the extractive industries in general, governments have also undertaken a range of actions targeting both large-scale industrial mining and ASM.

5.1. The lifting of legal bans

Returning to the source of women's exclusion from mining, progress is being made on lifting bans. Since around 1995, the ILO has been encouraging Member States to denounce Convention 45 Underground (Women) Work, in favor of newer standards to protect all workers in the mining sector, regardless of gender. Thirty countries have denounced Convention 45 to date. Moreover, the ILO Governing Body finally decided to classify Convention 45 as an “outdated instrument” in 2018 (ILO, 2018). The Convention is now slated to be voted on for potential abrogation at the 2024 International Labor Conference. Legal bans on women's employment in mining continue to come down. Since June 2017, at least seven countries have struck down legal restrictions on women's employment in mining, including Fiji, Jordan, Moldova, Niger, São Tomé and Príncipe, South Sudan and the United Arab Emirates. India's [Ministry of Labor and Employment](#) now allows women to work in underground mines during the day in “technical, supervisory and managerial work where continuous presence may not be required” and in above-ground mines at night, both of which were previously prohibited under the *Mines Act* of 1952.

5.2. Improving livelihoods for women in ASM

Read alongside Kuntala Lahiri-Dutt's other writings on women's labor in mining countries such as India (Lahiri-Dutt, 2012), we begin to trace the relationship between a global ban on women's work underground and women's labor proliferation in the informal mining economy. Ironically, one could suggest, that whereas social and political leaders possessed clear ideas about what types of formal work were unsuitable for women, these same societies did not appear to take issue with women working in equally-difficult and dangerous conditions in the informal mining sector—as long as they were unseen.

Average citizens would be the main protagonists to shift the debate on women's work in the informal mining sector when the fair-trade movement, starting in the 1990s, would eventually reach the ASM sector. Indeed, with the first attempt to scrutinize the sourcing of

artisanal-mined raw diamonds through the Kimberly Process Certification Scheme (KPCS), consumers began asking questions about the origin of their diamonds. Other precious metals and gemstones would follow suit. On the backs of the rise of due diligence and traceability schemes for an ever-expanding array of raw minerals, people are also paying some attention to the conditions under which women are working in these informal mining operations. At the same time, ASM research as a legitimate field of social science inquiry has bourgeoned; with this, so has the field of academics interested in carrying out research which explores the status of women engaged in the sector.⁶

Victoria Reichel's paper is a practical reflection on how international non-profit agencies can intentionally target women's wellbeing in due diligence and traceability schemes. We learn step-by-step about the work undertaken by the author's organization to implement a pilot project on gold traceability in northeastern Democratic Republic of Congo – specifically, how it was conceived, designed and implemented. So too, we glimpse early results. When juxtaposed against Gabriel Kamundala Byemba's more stark account of the consequences of international due diligence and traceability schemes under implementation in eastern Democratic Republic of Congo, we come to not only appreciate Reichel's practical account but see the urgency to promote more of these types of initiatives across the field of ethical, fair trade efforts. From Gabriel Kamundala Byemba's account, we develop an understanding of how ASM formalization efforts can inadvertently push women out of the informal value chain. An argument long made by leading ASM scholars is clearly laid bare in this paper: how formalization mining supply chains tends to marginalize women (Hinton, 2016; Hilson et al., 2018). It is again evidence for why gender must be a central feature of any programming to improve traceability and due diligence of global, raw mineral supply chains.

Despite debates around efforts to formalize ASM and its implications for women, some countries are giving formal recognition to ASM activities with a focus specifically on improving women's livelihoods. For instance, Peru began [legally recognizing](#) the work of *pallaqueras*—women engaged in a particular type of small-scale mining whereby they scavenge minerals thrown away by their male peers—in 2018. This reform not only recognizes women in the value-chain, but also grants them access to formal markets so they can engage in legal trading activities.

5.3. Transparency and benefit sharing

We are reminded, in the papers by Namalie Jayasinghe and Maria Ezpeleta, and that of Sophie Rickard, that improving women's standing in the extractive industries does not solely relate to labor force participation. These two papers, each of which focuses on two distinct extractive industries geographies, make the argument for why women's participation in benefit-sharing is crucial to long-term development. Whereas Namalie Jayasinghe and Maria Ezpeleta explore women's role in monitoring the use of revenues derived from extractive operations in Dominican Republic and Zambia, Sophie Rickard looks at the early stages of project development in Afghanistan and the difficulties faced in translating best practice on gender consultations into reality. Both papers are refreshing in their perspectives and remind us of how intentional we must be in building gender considerations into extractive projects, right from the start.

5.4. Engaging men and boys

A unique vantage point provided in the last paper of this special issue: that of men impacted by the shift from agriculture into mining-based labor in Papua New Guinea. Engaging men and boys in the pursuit of gender equality is a topic mentioned often but rarely really

⁶ See for instance Hinton, Lahiri-Dutt, Bashwira, Perks, Kelly.

put into practice. Here, as part of ongoing research, I-Chang Kuo describes how men's identities—as a result of increasing mining activity in their villages—have altered conceptions of manhood and family. It is a tragic story in some senses of a male culture and identity lost as a result of the predominance of mining in the labor economy. It is also an important lesson in the debate on gender and the impacts resulting from extractive industries: how impacts can be felt as drastically for men.

5.5. Affirmative action policies and gender quotas

Governments around the world are recognizing the benefits of women's equal participation in the extractive industries, and are making efforts to bridge the gender gap. Burkina Faso, for instance, enshrined its commitment to gender equality in its 2015 Mining Code. Peruset up a Gender Equality Committee and women's leadership program specifically for the mining and energy sector. Meanwhile, Chile's Ministry of Mining and Ministry of Women are formally cooperating to incorporate more women into the mining sector.

Affirmative action policies and quotas are also gaining traction as a way to increase women's participation in the sector. The most famous example comes from South Africa, where the 2002 South African Mining Charter included a 10% quota for women in the mine workforce by 2009.⁷ The policy has proven successful, with South Africa now boasting some of the highest rates of female participation in mining in the world. Other governments have introduced gender quotas or targets for their mining boards through legislation. Sierra Leone's 2009 *Mines and Minerals Act*, for example, requires that the Minerals Advisory Board consist of “two persons with considerable qualifications and experience in the mining industry generally one of whom shall be a woman.” Similarly, Tanzania's 2010 *Mining Act* requires that at least one third of members of the Mining Advisory Board are women. Affirmative action policies or quotas can be effective in union leadership, corporate boards, and training and educational programs as well.

6. Conclusion: moving forward

June 2020 marks the two-year anniversary since the inaugural conference held at the World Bank. Over these two years, some important developments in the extractive industries have taken root which are shaping an entirely new direction for oil, gas and mining in the future. To cite briefly: the impacts of digital disruption and automation on the extractives labor force; the global efforts to decarbonize our societies; the voracious demand for certain strategic minerals and the concerns for child labor; and the general greening of our economies and inter-related (though less discussed) increase in demand for ‘greening’ minerals as a result. Where does gender fit into this picture of a rapidly-shifting global extractive industries landscape? Furthermore, where have our efforts taken us since June 2018? To that end, we look forward to the second Gender and Oil, Gas and Mining conference, to be held in Washington, D.C. and co-hosted by the World Bank and Inter-American Development Bank, from March 3–4th, 2021.

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⁷ The *Mineral and Petroleum Resources Development Act* of 2002 and the Broad-based Socio Economic Charter for the South African Mining Industry of 2004. The South African Mining Charter introduced a clause stipulating that female miners need to make up at least 10% of a mine's staff. The penalty for not meeting these targets is the non-renewal of mining licenses.

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