

CHAPTER FOUR
WOMEN IN MINING:
GLOBAL AND NATIONAL TRENDS AND PERSPECTIVES

4.1 INTRODUCTION

The previous chapter provided the legislative framework for transformation of the South African mining sector. Several anti-discriminatory legislation, policies and frameworks were discussed that were initiated by government to remove injustices of the past and to promote equality in the workplace. Specific reference was made to legislation, labour and mining legislation aimed at promoting women's employment in the labour force in general and the mining sector specifically.

Although women all over the world have been involved in mining activities for centuries, mining has been considered a very masculine industry due to its heavily male-dominated workforce as well as the physicality of mining work. The heavy manual character of mine work together with the dirt and risk associated with mine work make the male miner the typical labourer (Lahiri-Dutt & Macintyre, 2006:4). Furthermore, the mining industry has not been an obvious career choice and preferred place of employment for women. Mining as a discipline was also not considered a good career choice for professional women. In addition, the mining environment was not organised to accommodate women and did not cater for the specific needs of women. In some countries, superstitious beliefs and protective laws also restricted women from working in mines. These restrictions are historical and social in nature and limited women's employment in the mining industry.

The way the mining industry was socially organised imposed unequal and social relationships on women and men and led to the subordination of the position of women, both within the mining industry and within the communities outside it (Lahiri-Dutt & Macintyre, 2006:6). As discussed in chapters Two and Three, various initiatives, protocols and legislation were developed globally to promote gender equality in society and the workplace and to redress the deep-rooted discrimination against women existing from the past. Furthermore, Millennium Development Goal number 3 explicitly requires the global promotion of gender equity and the empowerment of women (United Nations, 2011:20). Globally, the need also exists to make visible the role of women in large-scale mining operations and to encourage the different role players such as, among others,

government, the industry and the community, to promote women's participation in the mining industry.

Over the past years, the mining industry has come a long way in promoting women's employment in the industry. Women are also employed in significant positions of responsibility. However, the inclusion of women in the mining sector had and still has various implications for the industry (mineworkers, managers, mining bargaining councils and the relevant state departments) as well as for society at large. Despite the progress made so far, there is still a long way to go to successfully address the challenges and achieve sustainable equity and equality in the industry.

This chapter provides global and national trends and perspectives regarding women in mining. Firstly, an international view on women in mining is given by exploring the involvement of women in the mining industry in the following countries and continents: North America, Australia, China, Papua New Guinea and Africa. The different challenges these countries have been experienced are also highlighted. Secondly, a national perspective on women in mining is given by discussing the involvement and integration of women in the South African mining industry. Thirdly, the various challenges women as well as management are facing are outlined and discussed.

In the following section, global trends and perspectives regarding women in mining are discussed.

4.2 GLOBAL TRENDS AND PERSPECTIVES REGARDING WOMEN IN MINING

Globally, mining work and activities differ from mine to mine, from country to country and from continent to continent, and even from culture to culture (Miranda, 2004). According to the International Labour Organization (ILO), the number of mine workers totals approximately 13 million in 55 countries and a further 80 to 100 million persons, directly or indirectly, depend on mining activities for subsistence (Miranda, 2004). Despite these large numbers, Eftimie *et al.* (2009:9) postulate that it is worldwide extremely rare to find any extractive industry companies with higher than 10% female employment, with many being less than 5%. This view is supported by a recent study (2013) conducted by Women in Mining (United Kingdom) in collaboration with Price Waterhouse Coopers (PWC), in which it was found that globally, the level of female participation in the industry at all levels is astonishingly low (Moolman, 2013). Eftimie *et al.* (2009:9) provide the following main reasons for this tendency. In some countries, men have better access to education,

training and opportunities and therefore possess the necessary skills that mining jobs require. Furthermore, work in the extractive industry requires a certain level of physical strength and this together with potential pregnancies often lead to the low representation of women. Pregnancies mean that women are absent from work for substantial periods of time and are exposed to various risk factors, such as chemicals. In other countries, discrimination is based on a combination of stereotypes existing within the extractive industries and within communities among both men and women. For instance, work in the extractive industries is often regarded as 'men's work' and in many communities, superstitions and traditional beliefs dictate that women should not enter mines, for fear of explosions, or that women will drive ore bodies deeper into the earth.

Although few in numbers, women have now globally become an essential part of the mining workforce. According to Lahiri-Dutt (cited in Bhanumathi *et al.*, 2005:58), "[t]his is irrespective of time and space, level of development of the country or contemporary social structures of ideologies about the roles of a women". Currently, women miners play various roles in mining, they fulfil management positions, operate heavy machinery and are involved in artisanal mining processes, among others. The section below outlines and discusses global perspectives, viewpoints and challenges regarding women in the mining industry in different countries and continents. The involvement of women in the mining industry in North America, Australia, China, Papua New Guinea and Africa is explored. These countries and continents were chosen because significant research on the involvement and participation of women in the mining industry in these countries has been done.

4.2.1 North America

Canada is regarded as "a global leader in the exploration, extraction and export of minerals and metals" (Women in Mining Canada, 2010:6). Furthermore, the mining and exploration sector remains a long-time pillar of the economy, as it has consistently contributed 3.5 to 4.5% of Canada's GDP over the past two decades. The mining and exploration sector is also a major national employer, directly employing approximately 150 000 employees. If mineral and metal manufacturing is included, these numbers rise to 350 000, representing 2% of the national workforce (Women in Mining Canada, 2010:6).

In Canada, male domination in the mining industry reflected social convention and the historical hiring practices of mining companies. In 1980, the First Ontario Mining Act prohibited female employment in mining. In 1912 and 1913, amendments to legislation

allowed companies to hire women in a 'technical, clerical or domestic capacity', but still barred them from any mining work (Keck & Powel, 2006:281).

In Canada and the USA, two decades, the 1940s and 1970s, offer exceptions in women's employment in mining. Firstly, during World War II a labour shortage forced governments, companies and unions to employ women in critical mining positions. The Canadian government, calling on the War Measures Act, issued an order on 13 August 1942 that allowed women to be employed in mining, but only for surface operations. Women were recruited and mainly employed in production and maintenance jobs, such as operating ore distributors, repairing cell flotation equipment, piloting ore trains and working in the machine shop. This order was repealed by government at the end of the war and old gender barriers were re-erected (Mercier, cited in Lahiri-Dutt, 2011:33). Secondly, in the 1970s, North American governments introduced EEO legislation, driven by feminist movements, which opened up former male bastions such as mining to women (Mercier, cited in Lahiri-Dutt, 2011:33). The Ontario Mining Act was amended and mining companies were allowed to hire women for production jobs at surface operations (Keck & Powel, cited in Gier & Mercier, 2006:282). Women were employed in coal and hard-rock production jobs in the mining industry (Mercier, cited in Lahiri-Dutt, 2011:33).

In the 1970s, Inco (formally the International Nickel Company) began hiring women as part of its labour force. Inco remains the world's second-largest supplier of nickel (Keck & Powel, 2006:281). To be employed at Inco, women had to meet basic qualifications, pass a medical examination and undergo established training. If recruited, they could expect to receive 'equal opportunities, equal benefits and equal pay' (Keck & Powel, 2006:282). Financial security was the main driving force for women to apply for jobs at the mining company. The new recruits were confronted with the following challenges: Many doubted that women were capable of doing the very physically demanding work required by mining. Furthermore, the mine workplace was regarded as dangerous and requiring constant awareness and attention to one's physical environment. Another concern was the long-held belief that mining was regarded as men's work, as the work involves manual labour and the operating of heavy machinery and as the work environment is regarded as noisy, dirty and noxious (Keck & Powel, 2006:282).

At Inco, women experienced the following difficulties in the mining workplace (Keck & Powel, 2006:286):

- Initially, women fell out of place in the masculine mining workplace and they had to become more like 'a man' and adapt to a masculine work culture in order to be treated the same as men.
- Although some men were supportive and helped woman to adapt, others resented the fact that women were hired in a 'man's job'. Most of the men questioned the abilities of women to do mine work and they constantly tested their abilities.
- Men also used sexual harassment to maintain masculine dominance in the workplace. Harassment took many forms, such as sexual language, crude jokes, threats and verbal and physical assaults.
- Some men tried to undermine the women by refusing to help train them.
- Women also struggled to balance their paid work at Inco with their unpaid work at home. For many women the double duty was physically hard to maintain.
- Women also experienced difficulties with shift work. They were required to work on rotating eight-hour shifts. They found it difficult to meet and maintain their family responsibilities and also reported that it was physically hard on their bodies. They also felt that they were missing out on their children's lives.
- Women, and especially single mothers, with caretaking responsibilities also had to secure childcare. No organised childcare was available in the community. They had to rely on informal support from family members or sitters from the neighbourhood.

In the mid-1990s Suzanne Tallichet investigated the world of women miners by spending several months in a West Virginia coal mining community (Mercier, cited in Lahiri-Dutt, 2011:33). She found that women still faced tremendous challenges in the mining environment, including harassment from male co-workers and bosses and resistance from the community. In 1981, a Coal Employment Project survey revealed that bosses/supervisors, rather than co-workers, created and exacerbated women's problems underground. The research indicated that women were prevented from moving out of lower-paying strenuous jobs to more skilled positions. Women were not allowed to learn new skills to operate machinery or were not trained when they attained such skilled positions. Another challenge women had to deal with is resistance experienced from miners' wives, who viewed female miners as sexual and economic threats. These wives also believed that female miners were not physically suited to work underground and endangered their husband's lives by doing so (Mercier, cited in Lahiri-Dutt, 2011:42).

A study was conducted by Women in Mining Canada in 2010 to establish a baseline for measuring improvements to the current status of women in mining and exploration. Data were collected from the following four stakeholder groups:

- Women who were employed in the sector at the time, and those who were formerly and self-employed in the sector
- Employers in the sector
- Female students who were enrolled in post-secondary mining and exploration-related programmes
- Educators teaching in post-secondary mining and exploration-related study programmes.

The research report, entitled *Ramp-up: A study on the status of women in Canada's mining and exploration sector*, indicated that, although the representation of women had increased over the preceding decade (11% in 1996 to 14% in 2006), it remained significantly lower than the overall workforce (which stood at 47.4% in 2006) (Women in Mining Canada, 2010:9). The research report revealed that women were still facing major challenges to being employed and accommodated in the mining environment. Some of these challenges included the following:

- Flexible work arrangements were identified as the major issue with regard to working conditions that pose challenges. Furthermore, women indicated that they want to receive ample notice of assignments and flexibility in order for them to coordinate home and work responsibilities when assigned to travel and work in remote locations. Absence of childcare support and insufficient parental leave were also indicated as issues that pose challenges to working conditions.
- Women also indicated that they experienced difficulties to advance in their careers and fill senior positions in the mining industry. Specifically, senior management and executive positions are the most difficult to fill, followed by the CEO (chief executive officer), middle management and supervisory roles. The following aspects were identified as gender-related barriers that inhibit the advancement of women in the industry:
 - Male-dominated work culture
 - Misperceptions of women's abilities
 - Unsupportive work cultures and relationships with supervisors

- Absence of mentors and role models in senior roles
- Insufficient professional and career development
- Personal characteristics such as confidence, assertiveness and low self-esteem.

Respondents were asked to identify strategies that will contribute to the advancement of women in their careers. The following strategies (see Table 4.1) were identified, ranking from the most important to the least important.

Table 4.1: Strategies contributing to the advancement of women in their careers

No.	Strategy	Ranking
1.	Supervisor/senior leadership support	Most important
2.	Supportive colleagues/team	
3.	Professional development/training	
4.	Mentorship programmes	
5.	Women's network/associations	
6.	Supportive human resource department/practices	
7.	Supportive family/friends	Least important

Source: Women in Mining Canada (2010:16)

From the table above it is evident that an urgent need exists for support from persons in supervisory or leadership roles. Furthermore, professional development/training and mentorship programmes are required.

- A career begins with educational choices that one has to make. To date, few women have chosen the mining and exploration sector as a potential career. The research revealed that the following aspects were identified as main barriers for students to pursue a career in the mining sector:

- Students indicated that they never thought of a career in the mining sector.
- Students also indicated that they were unaware of career opportunities in the sector.
- A negative impression or perception of the mining sector still exists. Some of the students indicated that they do not want to work in the mining sector because the work environment or culture was unappealing.

Students suggest the following practices (see Table 4.2) to be followed by educators and employers to attract female students and graduates to the mining and exploration sector, again ranking from the most important to the least important:

Table 4.2: Strategies to attract female students and graduates to the mining and exploration sector

No.	Strategy	Ranking
1.	Market programmes and have talks about job opportunities for women in the sector	Most important
2.	Talk about job opportunities and share success stories of women in the sector (e.g. at campuses)	
3.	Ask female instructors who have worked in mining and exploration to give talks about the sector	
4.	Offer recruitment incentives/targeted recruitment	
5.	Communicate better image of the sector (environmental concern, supportive of women)	
6.	Offer competitive incentives/targeted recruitment	
7.	Offer scholarships and incentives for women	
8.	Provide stable/interesting employment opportunities	
9.	Offer practical work placements and job placement	
10.	Sponsor scholarships/grants	

No.	Strategy	Ranking
11.	Offer mentorship programmes	
12.	Provide practical work experience	
13.	Coordinate site tours/outreach tours	
14.	Offer healthy and safe work environments	Least important

Source: Women in Mining Canada (2010:16)

From this section it is clear that women have persistently sought access to mining jobs in Canada. Female miners endured discrimination, harassment and dangerous and demanding labour in order to gain access to mining jobs to enable them to provide and contribute towards more comfortable lives for their families. Recent studies, such as the Ramp-up study, initiated by Women in Mining Canada, showed that women are still experiencing various challenges in the mining industry but are prepared and willing to participate at all levels in the mining sector of Canada, from the office and laboratory, to heavy equipment operators and remote exploration camps, as well as at management, executive and board levels (Women in Mining Canada, 2010:2).

The following section discusses the participation of women in the Australian mining sector.

4.2.2 Australia

Australia is one of the world's leading mineral nations. It is the world's largest producer of gem and industrial diamonds, lead and tantalum, and the mineral sands ilmenite, rutile and zircon aluminium; the second-largest producer of zinc; the third-largest producer of gold, iron ore and manganese ore; and the fourth-largest producer of nickel. Furthermore, it is the fifth-largest producer of black coal, copper and silver (Australian Government, 2003). The mining sector in Australia is a significant contributor to the Australian economy, contributing nearly 8% of Australian's GDP, but employing less than 2% of the workforce (Messenger, 2012).

Before the introduction of EEO and affirmative action legislation, the minerals industry was the most highly sex-segregated industry in Australia. The following acts explicitly prohibited women from working underground in mines.

In, Tasmania, Section 22, Subsection (2) of the Tasmanian Mine Inspection Act of 1968 stipulated that “[e]xcept with the approval of the Chief Inspector (of Mines), no female shall be employed underground in a mine”. In Queensland, the Mine Regulation Act 1964–1983 stated that “[n]o female shall be employed underground in a mine except with the approval of the Chief Inspector”. In addition, the Coal Mining Act of 1925–1981 stated that “[n]o female shall be employed underground” (Bailey, 1988:53).

In New South Wales, Section 26 Subsection (3) of the Mines Inspection Act 1901 (Bailey, 1988:54) stated as follows:

No female person of any age shall be employed below underground in a mine unless:

- (a) she is employed in a position of management that does not require her to perform manual work;
- (b) she is employed in health or welfare services;
- (c) she is engaged in studies which require her to spend a period of training below ground in a mine; or
- (d) she is occasionally required to enter parts of a mine below ground on duties that do not require her to perform manual work.

Restrictions prohibited women from working underground in mines began to be lifted in the mid 1970s (Malan, 2010:255). Since the introduction of the EEO legislation in the mid-80s, some mining companies started to open up opportunities for women in the industry (Minerals Council of Australia, 2011:1). Furthermore, the Commonwealth Equal Opportunity for Women in the Workplace Act 1999 stipulates that all companies with 100 or more employees have to establish a workplace programme with the aim of enhancing women’s equal access to workplace opportunities. In order to comply, organisations are required to submit annual reports, including detailed employment statistics and EEO initiatives and strategies to enhance women’s participation. This process is administered by the Equal Opportunity for Women in the Workplace Agency (EOWA). Non-compliance can result in the organisations being named in Parliament and deemed ineligible for government contracts (Minerals Council of Australia, 2011:132).

According to Pattenden (1998:7), in 1998, the active workforce in Australia comprised 43% women, with only 11% women employed in the minerals industry. The majority of these women held clerical and administrative positions. When considering only mine sites

in Australia, female participation was reduced to less than 2%. Over the years, women's participation in the Australian mining industry has increased significantly. Despite these increases, women are more likely to be employed as clerical and administrative workers and professionals, and men are more likely to work as technicians, trade workers, machinery operators and drivers (Barrera *et al.*, 2010:2). In 2011, women comprised approximately 18% of the minerals industry workforce (both sites and corporate) compared to a national participation rate of 45%. At mine sites and mineral-processing operations, women represented just over 3% of all employees. Furthermore, indigenous women represented 12% of all indigenous employees (Minerals Council of Australia, 2011:1).

In 1998, Pattenden was commissioned by the AusIMM's WIMNet (Australian Institution of Mining and Metallurgy Women in Mining Network) to undertake in-depth research on employment barriers inhibiting female participation in the industry. Pattenden's research focus was female technical professionals, including geology, mine engineering and metallurgy. The researcher conducted 158 interviews with men and women working in the Australian minerals industry across numerous states, companies and commodity groups (Pattenden, 1998:12). The research revealed the following barriers to participation for female technical professionals (Pattenden, 1998:9):

- Lack of exposure to the industry during study years
- Poor perceptions of the industry in general
- Issues of harassment and discrimination
- Poor implementation and monitoring of EEO policies
- Issues related to the professional development of women, including challenges of male–female mentoring relationships
- Women believing they must out-perform men in order to be regarded equally
- Salary inequity
- Female exclusion from male-dominated professional and social networks.

Increasing the participation of women is high on the agenda of the Australian mineral industry, driven largely by the widespread labour shortages experienced in some skill areas and the need to maximise the human resource pool, including both female and male workers (Parmenter, cited in Lahiri-Dutt, 2011:68). Barrera *et al.* (2010:1) suggest

that the better use of female labour in the mining industry would reduce the drain of labour resources from the rest of the economy.

The importance of gender issues within the mining industry was recognised and highlighted in 2008 to 2009 by the following events that emphasised the critical role of engaging women at all levels within the mining sector: the 2008 Gender and Sustainable Livelihoods Workshop in Canberra, the 2008 Desert Knowledge Symposium in Alice Springs and the 2009 World Bank's Extracting Industries Week in Washington (Lozeva & Marinova, 2010:14). The mining sector itself also started to draw attention to the role of gender. In October 2009, the Mineral Council of Australia held a workshop in Adelaide, South Australia, focusing on the role of gender in the mining sector (Lozeva & Marinova, 2010:14).

In 2011, the Australian government partnered with the Minerals Council of Australia to produce three research reports examining the attitudes and experiences of women regarding working in the minerals industry. The research was conducted and prepared by the WiSER Unit at Curtin University and the Centre for Social Responsibility in Mining at the University of Queensland (Minerals Council of Australia, 2011:4). According to Julie Bishop, Minister for Education, Science and Training (Minister Assisting the Prime Minister for Women's Issues), the research provides a solid foundation for the minerals industry to implement practical strategies to improve its attraction and retention of female employees. She also emphasised that the minerals industry, through the Minerals Council of Australia, has made a commitment to increase the number of women employed in the industry over the next five years, and positively indicated that these reports and their recommendations will contribute to achieving this goal (Minerals Council of Australia, 2011:iii).

The above-mentioned research reports identified the following key factors for the minerals industry to consider in order to enhance the participation of women in the industry (Minerals Council of Australia, 2011:2):

- More actively demonstrating to women the range of jobs available in the industry and linking these to non-traditional disciplines (for example environmental science, social science, occupational health and safety)
- Establishing a comprehensive university-based programme to promote vacation opportunities in the industry and establish a cooperative arrangement for extended work experience

- Providing a more gender-inclusive work environment – this could be achieved by increasing the participation of women in professional and operational roles, by providing structured mentoring programmes for women, or by providing better gender awareness training for male employees
- Addressing key structural issues such as working arrangements and workplace facilities, and cultural issues such as workplace policies and practices
- Providing more family-friendly work arrangements, including greater provision of part-time work and career opportunities that enable people to transition in and out of employment in the industry
- Providing enhanced social infrastructure in rural and remote mining communities
- Implementing a range of cross-cultural measures to increase the attraction and retention of indigenous women.

The research also emphasised the importance of commitment of all stakeholders, the industry, governments and the community in order to comprehensively address the barriers to the effective participation of women in the mining industry (Minerals Council of Australia, 2011:3).

Although EEO policies assisted in the deployment of women in the Australian mining workforce, it is clear that much more is needed to create a sustainable diversified workforce. According to Keegan *et al.* (2001:57), a cultural shift is needed and requires change and education at many different levels, which is implemented and supported by mining executives, mining professionals, the broad mining workforce as well as those that aspire to be part of the mining industry. Furthermore, the authors suggest that diversification should not occur for the sake of diversification, but as a means to ensure improved performance, merit-based employment and employment conditions and repatriation in order to retain as well as encourage a diversified workforce.

The next section discusses the participation of women in the mining sector of China.

4.2.3 China

China has a large mining industry with a rich mineral resource base, and is unique in terms of its diversity. In total, there are 156 varieties of mineral deposits in China, with tin, tungsten, titanium, antimony and tantalum resources being the largest in the world, followed by coal, bauxite, molybdenum, niobium, silver and lithium resources as the

second most abundant. China's is also one of the world's largest producers and consumers of coal. Therefore, coal mining forms the major part of China's mining industry. Furthermore, China is a major mineral exporter, ranking among the top countries in sales of tin, lead, zinc and magnesium (Yao, 2006:235).

For a long time, Chinese women were at the bottom of the social hierarchy and were regarded as inferior to men. Women worked inside (private sphere) and did housework and men work outside (public sphere) to support their families. Although the situation has changed considerably in modern times, men still play the dominating role in China. Within the mining environment, mining and quarrying are viewed as masculine areas, with a minority women working in mines. With the formation of the People's Republic of China, female workers were encouraged to engage in every sector to contribute to overall society. In the mining industry, women have worked in operations at surface as well as underground, however as a minority group (Yao, 2006:235).

Gender discrimination was obvious in contemporary China and female workers were seen as less reliable, less efficient and more expensive than male workers. Women were also considered unsuitable for work in the heavy labour sectors. Therefore, the number of female employees in the mining and quarrying sector was the lowest among all 16 economic sectors (Yao, 2006:238). The following factors also contributed to the low numbers of women working at mines (Yao, 2006:238):

- The availability of cheap male labour made it easy to employ a large number of mature male workers, which reduced the chances of women being employed in the mines.
- Cultural and custom factors viewed mine work as a masculine activity.
- In very harsh conditions, miners usually worked without clothes, therefore it was inconvenient for male and female workers to work together.
- Superstitions also contributed to the low participation of women in the mining industry. For example, many people find it threatening to have women present in mining tunnels. The belief also exists that foot binding, a custom in old China, limits the physical ability of women and have an effect on their mobility.

In the time period 1949 to 1970, major social changes affecting women's lives took place under Maoist philosophy. The Chinese Communist Party made a great political effort to raise the status of women. Equality between women and men was an official state policy

and the principle of equal pay for equal work was emphasised by government. To a certain extent, women enjoy political, economic, cultural and legal rights in contemporary China (Yao, 2006:230). A large number of women came to enter the sphere of heavy labour industries. Women volunteer to do tough work that was previously considered unsuitable for women, such as heavy work in the pit and poisonous and noxious types of work. Women also work underground, albeit in the minority, and they have set up work groups such as the 'Iron Girls Well-sinking team' or the 'Female Work Team' (Yao, 2006:239).

Initially, women experienced many difficulties in competing with men in doing hard labour. They experienced health problems due to the demands on their strength and harsh worksites. Some women were affected by gynaecological diseases. A couple of accidents and disasters in the mines lead to female casualties. In 1960, a female miner was killed in an accident that occurred in the Taoyuan mine of the Shaanxi Tongchuan coal company. This accident raised the issue of women in mines and resulted in government ordering a stop to further employment of female miners. Nevertheless, a small number of women continued to work in the pits. In the 1980s a national earthquake disaster lead to the death of all 28 women working in a mine in the city of Jixi. This result was the issuing of the Provision for the Protection of Working Women, with enforcement in 1992, prohibiting the employment of women underground in mines. In 1994, a new labour law was promulgated, which strengthened the ordinance by banning the engagement of women in underground mining jobs. Since then, women were only allowed to work on the surface at mines, although in certain areas, women are illegally employed as miners (Yao, 2006:239).

As a result of enforcing the law of women's rights protection, women have disappeared from China's mines, except for those who are illegally employed. Women are mostly employed in unit-affiliated branches such as by-product factories, clubs, libraries, hospitals, sanatoriums, nurseries and schools. They also work in collieries and do office, assistant and service work such as in the pithead bathhouse, miner's lamp depot and refectories. Although women who are employed in the mining industry do not perform physical work, their contribution to the mining industry of China cannot be denied (Yao, 2006:241).

The following section discusses the participation of women in the mining sector of Papua New Guinea.

4.2.4 Papua New Guinea

Mining is one of the major industries in Papua New Guinea and involves large multi-national corporations. The major form of mining is of a large scale (open-cast mines) and shareholders and management are predominantly foreigners. Artisanal mining as well as small scale alluvial gold mining forms a small part of the industry. Mining is estimated to contribute 15% of the real GDP and employs more than 20% of the rural paid workforce, which are predominantly male (Macintyre, 2006:133).

In Papua New Guinea, mining is regarded as an important industry for the national economy. It is seen by many local people as a means of improving living standards, providing employment and bringing about economic changes that are associated with development and modernity (Macintyre cited in Lahiri-Dutt, 2011:21). Very few women are employed in the mining industry, due to traditional and cultural reasons. The Papua New Guinea Mining Safety Act of 1977 also prohibited women from working underground in mines (Macintyre, 2006:132). For those who are employed in the mining industry, it provides opportunities for career development and higher wages (Macintyre, 2006:143).

The majority of employees are from Australia, bringing with them ideas about the roles of women and men drawn from the work cultures in Australia. Research conducted by Marianne Yrke (Macintyre, 2006:133) at the University of Western Australia revealed that a large majority of miners and their wives held strong views about women's role being biologically determined. They believe that women are naturally mothers and homemakers and that they should not work if their husbands are able to provide for them. This belief is reinforced by findings of research done by Macintyre (2006:140) in Lihir, a group of islands in the New Ireland Province of the North East coast of mainland Papua New Guinea, which showed the entrenched views of Papua New Guinean men about female inferiority and subordination. The following statements were made by women who were interviewed: "Men think women have an inferior mentality"; "the attitude of the menfolk in undermining the capabilities of a women" and "women being degraded as second class to men" (Macintyre, 2006:140).

As the conventions of the division of labour that prevail in Papua New Guinea have their origins in the Australian colonial system, most local people accepted that in mining, women work in clerical positions and men are concentrated in the skilled and semi-skilled jobs in the pit and on the plant site. Early training reports of Lihir reflect the acceptance of this gendered division by both men and women (Macintyre cited in Lahiri-Dutt, 2011:25).

Although very few women are employed in the mining industry, mining companies are aware of the principles of gender equity in the workforce and in Papua New Guinea these principles are generally adhered to as standard practice. Job advertisements are also gender-neutral. Within the mining sector, female graduates work in professions and technical areas and are paid the same rates as men. Women work as geologists, engineers, chemists, heavy machinery operators, accountants, biologists, librarians/archivists, environmental scientists, computer scientists and human resource managers (Macintyre cited in Lahiri-Dutt, 2011:24).

Macintyre (cited in Lahiri-Dutt, 2011:26) conducted research on the experiences of women in the workplace in Papua New Guinea over a period of eight years, completing 100 surveys and 30 in-depth interviews. From the findings it is evident that although most of the participants worked in government jobs, a significant group worked in the minerals industry. Compared to women working in governmental jobs, women in the minerals industry represented the highest numbers of graduates and these women were younger than their public sector counterparts. According to the researcher, these women could be considered as the next generation of women who are potential leaders. The research revealed the following challenges that women are facing in the workplace:

- Almost all women experienced difficulties in gaining promotion.
- Women who moved beyond the bounds of home, family or garden have often been seen as actively seeking sexual adventure. This discouraged married women from working in male-dominated workplaces.
- Working women described how their husbands were suspicious and jealous and even expressed violent behaviour towards them when they suspected that they were 'too friendly' with their male colleagues.
- Local women who worked experienced problems with the 'double shift'. Apart from their work, they continue being housewives and mothers. In addition, gardening and the provision of the family's staple food are part of women's domestic duties in Papua New Guinea. Many women who work reported that they have to grow gardens for their family's food supply.
- None of the mining companies in Papua New Guinea offered paid maternity leave. In Lihir, basic provision was made for women to continue breastfeeding after returning to work. There was no workplace childcare at any mine.

- Mining companies are male-dominated, with the boards, management and workforce overwhelmingly male. Camp life and facilities cater for men, for example bar and snooker tables occupied the whole of the indoor recreation room.
- Women are often compounded with the interaction of factors in the workplace and at home. On the one hand, women face open antagonism, sexual harassment and discrimination in terms of opportunities for promotion, remuneration and in-service training when entering the workplace. At home, married women often face the jealousy of husbands if they are required to work shifts or have to travel to attend training sessions.
- Mining as a transnational industry employs senior people who are able to move from one country to another and from project to project. These mining jobs are often regarded by women as too disruptive of their family life. Living on the mining site enables people to have more normal domestic arrangements; however, the long shifts and cyclical rosters do not accommodate the needs of children. The fly-in/fly-out rostering policies for expatriate employees adopted in Papua New Guinea favour men who are single or married with a wife and family in their home country.

According to Macintyre (cited in Lahiri-Dutt, 2011:27), in order to achieve equality and equity in Papua New Guinea and to improve opportunities and conditions for women, affirmative action steps need to be taken. Equality is not immediately encouraged or facilitated by measures such as having policies of 'equal pay for equal work' or 'gender-neutral' advertising of positions. Rigid gender roles of a society should be taken into account, for example where women are unaccustomed to work with men, where men expect women to be subservient and where women who 'break' gender norms are stigmatised as 'sexually available' and 'sexually promiscuous' (Macintyre cited in Lahiri-Dutt, 2011:27). These problems require specific policies and strategies aimed at changing the preconceptions of both employers and potential employees. This in turn will improve the status of women. Furthermore, for effective change to occur, there should be political will and support from all involved (Macintyre cited in Lahiri-Dutt, 2011:27).

In June 2005, at the Women in Mining Conference in Madang, government agency representatives and executives of women in mining associations agreed to draw up a Women in Mining (WIM) Action Plan to address various issues affecting women and children in mine-impacted areas in Papua New Guinea. After extensive consultation between the government agency representatives, executives, women in mine-impacted areas as well as gender development officers at the six major mine sites, the WIM Action

Plan was developed for the time period 2007–2012. The primary goal of this plan was to improve the quality of the lives of women in mining in Papua New Guinea. The WIM Action Plan 2007–2012 represented a coherent, integrated and participatory approach adopted by the women who were affected. Three broad goals were identified, namely wellbeing (health and education), economic empowerment and social empowerment of women in Papua New Guinea. Different issues were placed under these three goals and eight specific goals were developed to address the identified issues (Department of Mining, Papua New Guinea, 2007:1). These goals cover the following aspects (Department of Mining, Papua New Guinea, 2007:v):

- Education and literacy
- Healthcare services
- Prevention or control of tuberculosis or sexually transmitted infections, in particular HIV/Aids
- Opportunities for women in economic, political, cultural and social life
- Institutional strengthening of women associations
- Sustainability of livelihoods for women
- Mitigation and avoidance of environment degradation
- Promotion of safety, security and peace.

From the above it is evident that women in Papua New Guinea, although not many in numbers, are involved in mining activities. Furthermore, it is clear from research done that women involved in mining activities still struggle with certain issues such as acceptance by male co-workers, sexual harassment, balancing work life and home life and jealousy of husbands. However, different stakeholders (the government agency representatives and executives of women in mining associations) showed their commitment to women in mining by drawn up an action plan to promote women's participation and development in the mining sector of Papua New Guinea.

The section below discusses the participation of women in the mining sector of Africa.

4.2.5 Africa

Africa is well endowed with mineral resources and harbours the world's largest mineral reserves of platinum, gold, diamonds, chromite, manganese and vanadium. In addition, it produces approximately 17% of the world's uranium (United Nations, 2009:2).

The contribution of African women in the mineral sector has always been considerable; however, the actual rates of participation in the African mining industry remain among the lowest in the world (Bocoum, 2003:4). The gaps between men and women also remain substantial. The average remuneration of women in mining is below that of men in most countries and mining companies and the representation of women in senior management positions is less than that of men. In terms of representation in the African mining industry, African women are employed as professionals, miners, mining company owners, jewellery storeowners, manufacturers and traders. Their involvement ranges from the exploitation of a number of minerals, such as gold, silver, diamonds, rubies and copper, to broad policy making, academia and project finance (Bocoum, 2003:4).

African women are mainly concentrated in artisanal small-scale mining (ASM), averaging between 40% and 50%. In some regions, the ASM workforce comprises 60% to 100% women (Hinton *et al.*, 2006:209). Women in ASM engage in the following multiple roles: They are labourers (for example diggers, panners, ore carriers and processors), providers of goods and services (for example cooks and shopkeepers) and are often solely responsible for domestic chores (Hinton *et al.*, 2006:210). These women experience the typical major issues of the sub-sector, including illegal trading, where sales are not transparent and smuggling is rife, benefits are lost to the community and, in most cases, the commodities pass through several hands at discounted prices before reaching the formal market. They are mostly unorganised and only a few female miners have any formal mining skills. Due to the nature of small-scale mining, they are also exposed to natural and environmental hazards (Bocoum, 2003:4). Bitwale, Vice-chairperson of the SADC Women in Mining Trust, noted that "[b]eing a woman, there are some natural hazards in the bush. There are wild animals, sometimes you need to climb a tree to run away from an animal. And because you are with men out there in the bush, you fear being raped" (Machipisa, 1997:1). Furthermore, women working in the small-scale mining sector are often forced to work beyond work hours, even in advanced stages of pregnancy, without leave or crèche facilities. In some of the quarries, women are forced to work at night and are exposed to sexual abuse. This leads to some of the young girls being branded as 'spoilt' and not respectable for marriage. In the stone crushers, most women

suffer from tuberculosis and so do their infants who are brought to the workplace (Beneath Botswana, 2011).

Moyo (2010:62) and Bocoum (2003:3) list the following reasons that contribute to the low representation of women in the African mining industry:

- Historically, the mining industry institutionalised discrimination against women – the migrant labour system in most of the countries employed men and introduced laws that prohibited spouses from living together at mines.
- Negative cultural and paternalistic attitudes towards women made it difficult for them to get jobs in the mining industry.
- Women had less access to education and training and did not have the necessary skills required in the mines.
- Recruitment of women is rendered difficult due to the fact that the mining industry is predominantly an employer of full-time workers.
- Longer working hours and compressed shifts tend to have a negative effect on women because of their family responsibilities.
- Underground work takes place in poor conditions, for example female mineworkers working in production underground are exposed to dust, heat and noise.
- Environment mismanagement due to mining activities not only put pressure on the natural environment, but also affect workers' health.

Although women in Africa experience various constraints and barriers entering the mining industry, some women have already succeeded and showed that women can make a meaningful contribution to the mining industry. The following African women made a huge impact in the mining industry and are regarded as “pioneers who are breaking new ground, and in so doing, make it a little easier for other women to follow” (EP, 2008).

Namakau Kaingu, a Zambian woman, started mining in 1990. She is the Managing Director of Kaingu Gem Mines and Lapidary Limited, mining and processing a precious stone, aquamarine. She exports her product to the USA, Austria, the Czech Republic, South Africa, Ghana and India. Kaingu is also the head of the SADC Women in Mining Trust. Kaingu has overcome many obstacles since discovering the gemstone. She notes that some countries in the SADC region still have laws in their mining policies that forbid women from working underground. Furthermore, she believes that cultural norms and

myths also play a role in the low participation of women in the mining industry. She said: “In certain instances, cultural norms say that women are not supposed to go into the mines. There are some myths that if a women goes underground, the stones (minerals) will disappear” (Kaingu, 2009:4). With the SADC Women in Mining Trust, Kaingu aims to address the existing gender imbalances in the region. Furthermore, she notes that “[i]f you go to the ministries of mines in the region, you find that geologists are men, engineers are men, metallurgists are men, surveyors are men and the people in charge of explosives are all men, so these are the imbalances we want to change”. She also believes that “women can actually do all the other work that men are doing” (Kaingu, 2009:4).

In Botswana, Sheila Khama started her career at the Anglo American Corporation subsidiary in Botswana as Group Secretary in 1994 and served in this capacity for eight years before moving up to working solely at De Beers Botswana (Beneath Botswana, 2011). She served as the CEO of De Beers Botswana between July 2005 and March 2010. She also served as a non-executive director of several companies, including Debswana Diamond Company (ACET, 2013). Khama currently holds the position of Director: Extractive Resources Services at the African Centre for Economic Transformation (ACET). Her primary responsibility is to give strategic direction to sub-Saharan governments in the regulation and management of mineral, oil and gas resources (ACET, 2013).

In South Africa, the following women showed that women can excel in work traditionally considered the domain of men. In government, Buyelwa Sonjica, the former Minister of Minerals and Energy, and Susan Shabangu, the current Minister of Mineral Resources, took the leading roles in the mining industry. On entrepreneurial level, Bridgette Radebe is the first black hard-rock-mining entrepreneur in South Africa. She is also the founder of Mmakau Mining. She started her career as a miner and is currently the president of the South African Mining Development Agency, representing the interests of junior and emerging miners. She was part of the team that drew up the Minerals and Petroleum Development Bill and played a key role in the development of the Mining Charter (SAinfo reporter, 2013). In April 2006, Prof. May Hermanus was appointed as the director of the Centre for Sustainability in Mining and Industry (CSMI) in the School of Mining Engineering at the University of the Witwatersrand. Prior to her appointment at CSMI, Hermanus was the first female chief inspector of mines at the DME. Hermanus showed her commitment to mine safety by closing down Gold Fields’ Beatrix gold mine for a week after two serious underground accidents. She has been involved in major accident investigations and has contributed a great deal to the development of health and safety policy and legislation in South Africa. According to Hermanus, not enough is being

invested in bringing women into the sector and ensuring that they are sufficiently integrated into the work environment to stay. She says cultural shifts need to take place so that women are retained in mining (EP, 2008). Currently, Prof. Hermanus serves as the executive director of Natural Resources and the Environment at the Council for Scientific and Industrial Research.

Jean Chawapiwa-Pama was appointed as Rio Tinto's Vice-president of Communications and External Affairs for Africa in September 2008. She was previously the General Manager of the same unit having been appointed in February 2007. In 2008, when Rio Tinto joined the Chamber of Mines, she became Rio Tinto's representative on the chamber's executive council, the first and to date only woman to hold this position. She gained her experience from three mining companies: before joining Rio Tinto, she worked for Placer Dome, and later for Barrick after its takeover of Placer Dome. Although she is positive and optimistic about the positions women occupy in the mining industry, she still feels that women in the industry are not very visible in the operations and technical fields and tend to occupy the so-called softer jobs, such as human resources, communications, and health and safety. She emphasises that young women need to be encouraged to study engineering and must be given opportunities to enter the mining industry and rise through the ranks. She also believes that the existing mindset that 'certain types of jobs are reserved for men and some for women' must be changed. She believes that women can do any job they put their minds to (EP, 2008).

It was recognised that women faced a number of barriers and challenges to enter the mining industry in Africa. This led to the establishing and launching of the following associations and initiatives to investigate and address the issues that women are facing and encountering in the industry.

The SADC Women in Mining Regional Trust, which is based in Lusaka, was founded in 1997. The Trust represents eight countries: Angola, Botswana, Namibia, Mozambique, Swaziland, Tanzania, Zambia and Zimbabwe. The major aim of the trust is to mobilise all women miners in the formal and informal mining sectors in the SADC countries through research meetings and seminars. National associations were formed in Malawi, Mozambique, South Africa, Tanzania, Zambia and Zimbabwe (Mining Africa, 2007).

The Association of African Women in Mining Network (AFWIMN) was launched in Elmina, Ghana, in September 2003. The following countries participated: Burkina Faso, the Democratic Republic of Congo, Ghana, Guinea Conakry, Malawi, Mali, Namibia, Nigeria, Senegal, Tanzania and Zimbabwe (Kaingu, 2009:2). This initiative was supported by,

among others, the United Nations Development Fund (UNIFEM), the SADC Gender Program from CIDA Canada, the Minerals Commission of Ghana and the World Bank Group through the CASM initiative. The major aim of AFWIMN was to “set a vibrant and transparent sector where gender imbalances do not exist and access and control of resources from the mining industry are equally distributed”. Furthermore, AFWIMN proposed to achieve its objectives by making visible the participation of women in mining through gender mainstreaming, growth, innovation and increased productivity in order to achieve economic empowerment of women, poverty reduction and employment creation for all (Bocoum, 2003:6).

From the above it is evident that women are involved in various mining activities throughout the African continent. In many African countries their involvement was and still is mainly concentrated in ASM. Women in the African mining industry also experience various challenges and are exposed to numerous natural and environmental hazards unique to Africa. However, different initiatives have been established to investigate and address these issues and to promote women’s participation in the African mining industry.

4.2.6 Conclusion

From the section above it is clear that, globally, women are involved in various activities in the mining sector, formally as well as informally. Despite women’s involvement in the mining sector, they are not equally represented in the sector and the number of women in the sector remains extremely low. Despite social and cultural differences as well as mining activities conducted in the various countries and continents, it is clear that women across the globe experience more or less the same challenges in the sector. This relates to the following, among others:

- There is a negative perception of the mining industry.
- Mining is still regarded as a masculine workplace that favours men.
- Mine work is physically draining.
- Women often feel undermined by their male co-workers.
- Women continuously struggle to find a balance between their ‘paid’ work at the mine and ‘unpaid’ work at home.
- Shift work remains a challenge mainly due to women’s family responsibilities and their inability to cope with the demands of shift work.
- Issues of discrimination and sexual harassment still exist.

- There is insufficient professional and career development, including poor mentoring systems and career paths.

The following section provides an outline and discussion of the participation of women in the South African mining sector.

4.3 NATIONAL TRENDS AND PERSPECTIVES REGARDING WOMEN IN MINING

Mining has been regarded as the backbone of the South African economy since the discovery of diamonds and gold towards the end of the 19th century. Mining is one of South Africa's most important economic sectors and remains an important driver of the country's economy (Zungu, 2011:4). South Africa has a rich mineral resource base that includes the eight major commodities, namely gold, platinum, diamonds, copper, uranium, cobalt, manganese and chromite. The importance of mining is reflected, among others, in its contribution to the GDP, fixed investment activity, foreign exchange earnings and employment (IDC, 2012:13). Although the South African mining industry is currently under enormous pressure and experiences various challenges, it still makes a significant contribution to the economy of South Africa. As indicated in Chapter One under 1.1, the South African mining industry accounts for over 5% of South Africa's GDP and in 2012 only, it helped to create 1 353 383 jobs in the South African economy – 514 760 jobs directly and 838 623 jobs indirectly.

In South Africa, a distinction can be made between the formal mining sector and the informal mining sector. The formal mining sector is well regulated and the following professions are associated with mining: mining engineering, metallurgy, chemical engineering, geology, electrical engineering, mechanical engineering, analytical chemistry, environmental management and mine surveying (Hermanus, 2007b:3). The informal mining sector consists of artisanal and small-scale mining and in South Africa no distinction is made between these types of mining. Informal mining activities are associated with poverty and black South Africans mostly engaged in this sector. The sector is largely unregulated and the miners often do not have the necessary business management skills and are not aware of the legal requirements of mining and the health and safety risks associated with mining. Artisanal mining is often undertaken as a means of survival and to support traditional occupations such as pottery making, building and decorating traditional homes, and cultural demands for cosmetics for the face and body (Hermanus, 2007b:2).

As sketched in the Problem statement in Chapter One under 1.2, mining (in the formal mining sector) as occupation in South Africa was traditionally reserved for men only and mining law prohibited women from being employed in operations underground. Furthermore, women were constrained by tradition that prevented them from working in surface mines or in surface occupations. Women are still at the periphery of the industry, as they have limited access to mineral wealth in terms of ownership or equity participation. Furthermore, they are marginalised in terms of governance and management of the industry, as reflected in the low presentation of women on the boards of directors of mining companies as well as in senior management and supervisory positions (Moyo, 2010:61). According to Hermanus (2007b:2), men also dominate small-scale mining, which forms part of the informal sector. Women tend to be employed in informal small-scale mining and are represented in significant numbers among artisanal miners (Hermanus, 2007b:2).

As indicated in Chapter Three, the new democratic government of South Africa adopted a number of strategies to open up the mining sector to HDSAs, including women, as part of its economic empowerment policy. The Constitution of the Republic of South Africa was implemented and laid the foundation for a democratic society (see Chapter Three under 3.2.1). Furthermore, a comprehensive reformation of the South African labour policy took place. Various acts were introduced and amended to further transform the total labour industry, including the mining sector (see Chapter Three under 3.2.2). In addition, various codes of good practice were initiated to guide employers, employees and trade unions to implement the key principles of the EEA. Some of these codes include the Code of Good Practice for the Basic Conditions of Employment and Pregnancy; the Code of Good Practice on the Handling of Sexual Harassment Cases and the Code of Good Practice on the Arrangement of Working Time.

New mining legislation was also introduced and not only prohibits the exclusion of women, but also requires from companies to actively change the demographic profile of the company and to ensure that they have plans in place to achieve the targets set by the mining charter (see Chapter Three under 3.2.3). The Mine Health and Safety Act (29 of 1996) removed restrictions prohibiting women to work on mines, including underground. The Mineral and Petroleum Resources Development Act (28 of 2002) and the Broad-based Socio-economic Empowerment Charter (the Mining Charter), among others, were introduced to further redress the imbalances from the past and to promote women's employment in the mining industry. In addition, the new mining charter was amended (the Amendment of the Broad-based Socio-economic Empowerment Charter for the South African Mining and Minerals Industry) and launched in September 2010. The amendment

aims to further promote women's participation in the mining industry and provides set targets for HDSA participation, which include women, which should be reached by March 2015 (see Chapter Three under 3.2.3.6).

Furthermore, the DME facilitated the establishment of the South African Women in Mining Association (SAWIMA). SAWIMA was set up as a vehicle to help mobilise women to participate in mining (DMR, 2011b). The South African democratic government also endorsed key international and national protocols in an attempt to further promote gender equality, equity and the empowerment of women in the country (see Chapter Two under 2.5.2).

To include and promote women's participation in the mining industry, and specifically in core mining activities, was and still is not an easy task at hand for mining companies. Mining companies continuously struggle to reach the targets set by the Mining Charter and run the risk of losing their mining licenses to operate if they do not meet the requirements.

Despite all the challenges mining companies had to deal with to include women in the mining workforce, women's participation in the industry has slowly risen since the introduction of the Mining Charter and related government equity legislation. In 2001, 20 000 women were employed in the mining sector and in 2012, 52 000 (South African Institute of Race Relations, 2012:232). This indicates a significant change of 160% in female employment. (See Table 4.3 below, which reflects the participation of women in the various mining commodities from 2000 to 2009.)

According to the DMR (2011a:12), total employment in the mining industry shrunk by 5.1% in 2009, mainly due to the effect of the global economic and financial crisis. In the same period, the employment of women grew by a staggering 11%. In 2010, the performance of the mining industry demonstrated significant recovery and total employment grew by 1.2%, with female employment growing by a further 15.6%. This is a clear indication that governments' efforts to diversify the mining workforce by interventions such as the Mining Charter and other legislation, as discussed in Chapter Three, are beginning to bear fruit (DMR, 2011a:12).

Table 4.3: Women employed according to subsector: 2000–2009

Subsector		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Coal mining	N			2228	3038	3383	3863	5729	6745	8112	8848
	%			4.7	6.4	6.7	6.8	8.1	9.5	12.4	12.5
Gold mining	N			5430	5193	6568	5422	6454	9508	12945	13080
	%			2.7	2.6	3.6	3.4	4.0	5.9	7.8	8.2
Platinum Group Metals (PGM) mining	N			3008	3953	4872	5097	8491	10400	11488	15555
	%			2.7	3.1	3.2	3.3	4.6	5.7	5.7	8.5
Diamond mining	N			1318	1490	1557	2930	1627	1479	3543	2092
	%			8.0	8.1	7.3	13.3	13.5	12.3	19.0	17.4
Other mining	N			3634	3024	2257	3714	4032	4712	4022	6042
	%			10.6	8.3	6.1	9.6	7.6	8.9	7.2	11.5
CLAS	N			910	1546	1833	2749	2133	969	2711	3997
	%			3.5	4.9	5.2	5.7	12.7	9.9	12.0	12.6
Services incidental to mining	N			976	1671	1758	1310	1999	3002	2044	2930
	%			4.6	4.1	4.6	3.3	6.0	6.0	5.7	8.8
Diamond processing	N			160	724	1245	638	1132	1783	1479	931
	%			34.4	38.7	45.7	36.7	49.9	64.0	54.1	52.4
Jewellery manufacturing	N			611	1984	2637	2448	2530	2213	1918	2470
	%			47.9	55.3	55.3	52.0	47.5	53.4	54.8	50.5
Total	N	12537	10 602	18275	22623	26110	28171	34127	40811	48261	55945
	%	3.2	3.6	4.0	4.5	5.0	5.3	6.4	7.5	8.5	10.1

Source: Table adapted by author (based on Hermanus & Govender, 2012:8)

Although women's participation in the mining industry has risen, they are still not properly represented in all levels of the sector. White women continue to dominate the professional positions in mining and black women tend to engage mostly in manual work and artisanal mining (Hermanus, 2007b:3). Table 4.4 below indicates the workplace profile population distribution of the mining and quarrying sector according to race and gender for the period 2011–2012 as published in the Commission of Employment Equity Annual Report (DoL, 2012:40–46). It is evident from the figure that white people (both men and women) continue to dominate management positions. This is also in line with the findings of the Mining Charter impact assessment conducted by the DMR in 2009. The findings showed that, in 2009, the average rate of female participation in the mining industry was 6%, of whom most were occupied in supportive functions and less than 1% held core management positions, which was largely filled by white women (see Chapter Three under 3.2.3.5 (b)).

Table 4.4: Workforce profile population distribution of the mining and quarrying sector, 2011–2012

Workforce profile at the top management level by race and gender										
Male				Female				Foreign national		Total
African	Coloured	Indian	White	African	Coloured	Indian	White	Male	Female	Total
14.9%	1.8%	2.1%	66.1%	3.2%	0.5%	0.6%	7.3%	3.5%	0.1%	100%
Workforce profile at the senior management level by race and gender										
Male				Female				Foreign National		Total
African	Coloured	Indian	White	African	Coloured	Indian	White	Male	Female	Total
15.4%	2.2%	3.2%	60.9%	3.4%	0.6%	1.2%	9.3%	3.4%	0.3%	100%

Workforce profile at the professionally qualified level by race and gender										
Male				Female				Foreign National		Total
African	Coloured	Indian	White	African	Coloured	Indian	White	Male	Female	Total
22.7%	2.6%	2.7%	48.4%	7.5%	1.0%	1.3%	11.2%	2.2%	0.4%	100%
Workforce profile at the skilled level by race and gender										
Male				Female				Foreign National		Total
African	Coloured	Indian	White	African	Coloured	Indian	White	Male	Female	Total
42.9%	3.6%	0.8%	31.6%	8.2%	1.0%	0.5%	6.7%	4.5%	0.1%	100%

Source: Table adapted by author (based on DoL, 2012:40–46)

During the key note address delivered by Susan Shabangu (2011), Minister of Mineral Resources of South Africa, at the Annual Women in Mining Conference at the University of the Witwatersrand, she emphasised the following: “The role and place of women in mining is not a mere luxury or irrelevancy. It is a democratic must and the right thing to do. It is something that must happen, and be made to happen, without delay. It is part of righting the wrongs of the history”. Shabangu continued by saying that the mining industry continues to hire women as human resource personnel officers as well as cleaners and in other peripheral jobs. She said: “Women’s place is and should not be in the ‘kitchen (that is, soft jobs)’ of mining companies. We wish to see women occupying meaningful and even strategic jobs in the mining industry, including those at the senior level, including board level”.

According to Leila Moonda, BEE Institute CEO, “we still live in a patriarchal society and come from a past that has undermined and discriminated against women over the years” (Motau, 2011). The author says that women in the mining industry have been marginalised, in particular, because the mining industry is known for its demands for technical and manual skills. Furthermore, the author emphasises that the role of women in

society on a broader scale must be reconsidered in order to support BEE in the mining industry.

From the above it is clear that although the number of women in the mining industry has risen, there is still a long way to go to successfully and sustainably ensure women's participation in the industry. Furthermore, the legacy of apartheid and racial discrimination still affect women's position in South African mines. To achieve equality in the industry, more women should be appointed in core as well as management positions in the industry. Employing women in the mining industry can also address the high unemployment rate in South Africa, which currently stands at 25.6% (Greve, 2013). This will also promote women's empowerment and will translate into poverty alleviation in the country. Therefore, the successful participation of women in the mining sector will not only contribute to the promotion of gender equity in the industry, but will also help to alleviate poverty in the country as well as change the culture of mining. According to Mlambo (2011), the growing participation of women in the industry will challenge the gender stereotypes that portray mining as suitable for men only.

The inclusion of women in the industry had and still has numerous implications for the mining industry and mining companies are facing tremendous challenges with the deployment of women in the industry. These challenges are discussed in the following section.

4.4 CHALLENGES AND IMPLICATIONS REGARDING THE DEPLOYMENT OF WOMEN IN THE CORE BUSINESS OF MINING

As already indicated in the sections above, mining as a discipline has not been an obvious and preferred career choice for women for many years. The mining industry was always predominantly male dominated and has traditionally drawn its labour from a largely male rural workforce. Furthermore, the mining industry was not organised to accommodate women in the core business of mining. As mentioned in the section above, mining companies in South Africa are obliged by mining legislation to make specific provision for the inclusion of women in core mining positions. The inclusion and integration of women in the industry are accompanied by various challenges, not only for management of mining companies but also for male co-workers and for the 'newly' employed female mineworkers. Some of the major challenges and implications that mining companies are facing are highlighted in the section below.

4.4.1 Social and cultural issues

The historical, gendered roles played by women and men in the mining industry were quite traditional. Men were breadwinners and entered the public sphere (the mine workplace), while women were responsible for maintaining the family and therefore remained in the domestic sphere (the home) (Ranchod, 2001:8). Women also missed out on the potential benefits gained from the mining industry and income was largely captured by men. Traditionally, only two areas of the industry were open to women. Firstly, they were mainly employed in administrative and supportive positions and secondly, they acted as prostitutes in brothels that sprang up next to mining camps (Singer, 2002:1). The environmental and social impacts of mining also tended to fall upon women through the loss of productive agricultural land, marginalisation and an increase in health risks, including HIV/Aids (IFC-Lonmin, 2009:5).

Women entering the mining sector are facing a multitude of obstacles, ranging from resistance by male workers to their own perceptions about mining. Historically, the mining industry has been seen as a homogeneous masculine occupational culture that favoured men and did not accommodate women. A mindset exists that mining is not an occupation for women (IFC-Lonmin, 2009:28). Previously, women employed at the mines were doing jobs that were traditionally viewed as women's work, such as clerical, secretarial, catering, adult education, human resources, nursing and other health work (Ranchod, 2001:16). According to Moyo (2010:67), the patriarchal culture, values and attitudes led to mining being viewed as unsuitable for women and women as subordinate to men. Moreover, mining-related jobs were perceived as extremely physical, accompanied by a noisy, dirty and harmful environment and were known as 'men's jobs'. Traditionally, men were seen as 'strong and capable' and women as 'powerless and problematic' (Benya, 2009:24). Women were rarely employed in 'core positions' and were considered unfit for the hard labour of working in the mines (Badenhorst, 2009:55).

When women first entered the mining industry, they also encountered opposition from some male employees, were exposed to crude jokes and harassment, and struggled to be accepted by their male colleagues (Women in Mining Canada, 2010:10). This problem was reinforced by the requirements of the Mining Charter, which intended to help women by enforcing the 10% female representation target, but in actual fact hindered them. Women who were employed on the mines *pre-Charter* were assumed to have been appointed on merit and so were treated with respect. Women who are employed on the mines *under the Charter* run the risk of being seen as 'quotas' and are therefore not being taken seriously. They therefore have to prove themselves from scratch and must do so, so

as not to let down the women who come after them (Reichardt, cited in Campbell, 2007:3). A study conducted by AngloGold Ashanti (2005) revealed that women joining the industry often do not have sufficient knowledge of the industry or their workplaces and are frequently placed in inappropriate positions, setting them up for failure. Their male counterparts have a resistance to women being 'pushed' into workplaces and do not see or hear of many successes, but rather focus on their 'failures'.

Working conditions in the mine are also often accompanied by new work life challenges. Working women are forced to balance their paid work with unpaid labour at home. This implies that they have to balance challenges at work, often physical hard work, with their daily responsibilities of running their households as well as taking care of the children. In general, female miners tend to work longer hours than men, because of their added informal responsibilities at home. Female miners are also often obliged to work in shifts. This implies, among others, that they are working for long hours as well as missing out on an important part of their families' lives, and in particular their children's lives. This places tremendous pressure on female workers and, in this case, the female miner. According to Hermanus (2007b:5), shift systems also affect women's participation in sectors such as mining. The author emphasises that shift systems that are designed without taking account of domestic responsibilities of women contribute to the low participation of women in sectors such as mining.

This section highlighted just a few of the social and cultural issues that female miners are facing in the industry. It was also evident from this research that women still experience problems with stereotyped perceptions, acceptance by male co-workers, sexual harassment and balancing work life with family life (see Chapter Seven under 7.2.3 and 7.3.1). In order to successfully integrate women into the mining labour force, mine management need to consider these aspects. The next section discusses challenges related to the physical infrastructure of mines regarding the deployment of women in core positions.

4.4.2 Infrastructure issues

One of the major challenges mining companies had and are still facing with the deployment of women in the core business of the industry is the provision of adequate infrastructure facilities. Because the mining industry previously excluded women, facilities were only provided for men. Major changes were therefore needed in order to accommodate women in the traditionally male-dominated environment. It was also evident from discussions held at the second annual Women in Mining Conference (at Gold Reef

City from 23–25 February 2011) that, although some mining companies have already addressed this issue, other mining companies are still struggling to provide adequate infrastructure and facilities for women. The following main challenges in this regard are encountered:

4.4.2.1 *Ablution facilities and change houses*

Although various mines built and upgraded ablution facilities and change houses to accommodate women in the core business of mining, deficiencies are still prevalent, as indicated by several female employees of various mines (in South Africa) during the second annual Women in Mining Conference. This view was also reinforced by findings of this research (see Chapter Six under 6.2 and 6.2.3.1). According to Badenhorst (2009:61), proper ablution facilities and change houses, provided for women, need to be created in order to ensure their privacy, protection and dignity. Female employees need a space of their own in which to wash and change before and after their shifts. Men and women also find it difficult to share the same toilets; therefore, decent toilets that provide for the specific needs of women (which include sanitary bins for the disposal of used sanitary products) underground and at the surface should be created. These facilities should be in accordance with international standards and specifications. This implies, among other requirements, that there should be a shower for every six women (IFC-Lonmin, 2009:21). Zungu (2012:12) noted that inadequate sanitary and hand-washing facilities could increase the risk of developing vaginal infections and could add to the risk of transmission of infections. Furthermore, a failure in the provision of adequate facilities for women employed in core positions could lead to women feeling “ncomfortable in an already uncomfortable environment” (MTS, 2011:16).

4.4.2.2 *Housing*

Generally, mining communities are characterised by a lack of adequate housing facilities. Before democracy, the majority of mine workers in South Africa lived in hostels as a solution to housing problems and a way to control black workers. In an attempt to destroy the legacy of apartheid and restore the dignity of the black population, the ANC government and Congress of South African Trade Unions (Cosatu) aimed to gradually phase out the hostel system by promoting the construction of decent family accommodation (Chinguno, 2013:1). Unions also negotiated with employers to convert their obligation to provide housing into a ‘living out allowance’, rather than the hostels being the only option. Furthermore, the new Mining Charter (see Chapter Three under 3.2.3.6.4 (e)) explicitly required from mining companies to promote human living

conditions for mine workers and also set the framework, targets and timetable for achieving these requirements (RSA, 2010a:4).

Despite of these measures, the housing conditions of mine workers are still very poor and a large part of the population live in tin shacks (poorly constructed corrugated sheds) (Cronjé & Chenga, 2007:31), informal settlements, villages or low-cost government housing, or have bought their own homes (Chinguno, 2013:1). The findings of the Mining Charter impact assessment conducted by the DMR in 2009 revealed the appalling unhygienic living conditions and inadequate facilities the hostel dwellers are subjected to. Although the findings indicated that reasonable progress has been made in terms of the creation of decent housing and living conditions for mine workers, the upgrading as well as the conversion of existing hostels into family units remain extremely low (see Chapter Three under 3.2.3.5(e)).

Women, who now form part of the mining industry, have unique needs in terms of housing. It is much easier for male employees to live in hostels, separate from their families. Female employees are still responsible for childcare and household duties at home and need to stay near their families. This implies that women have to travel from home to work. Transport then often becomes a problem because not all mining companies provide transport for their employees. Mine work is also related to shift systems, which often result in employees finishing late and getting home late (Mlambo, 2011:2). An urgent need for housing was detected during this research (see Chapter Six under 6.2.3.4). Units catering for the needs of a family will provide an acceptable solution to many women employed in the mining industry.

The section below outlines and discusses specific issues regarding personal protective equipment (PPE).

4.4.3 Personal protective equipment issues

Because the mining industry was historically viewed as a 'man's world', PPE was designed with men in mind. As women differ from men in terms of size and shape, their PPE should be adjusted and developed to ensure a proper fit, comfort and protection. On average, women's feet are shorter and narrower than men's, their body is shorter in length, their shoulders are narrower and their hips are usually wider at the hip (Zungu, 2011). The lack of correctly fitting PPE can affect the way women are protected as well as the way in which they are able to perform their jobs. Ill-fitting PPE restricts the ability of employees to move easily and exposes them to environmental hazards associated with

mining. Therefore, PPE needs to be developed with women in mind. Manufacturers therefore play a crucial role in the provision of correctly fitting PPE (Badenhorst, 2009:62).

According to Zungu (2011) and Managing Transformation Solution (MTS) (2011:16), women employed in core mining positions experience the following main problems with PPE:

- If one-piece overalls are provided, toilet breaks for women tend to be longer and is time-consuming, as the following routine must be followed: unclip the headlamp, unfasten the belt and take off the battery and rescue-pack, take off any clothing worn over the overall, and finally take off the overall itself. When all is done, the PPE must be put back in the reverse sequence.
- If two-piece overalls are provided, the style of the overall is sometimes unsuited to the larger female physique. The low-waist pants and short jacket tend to cause the middle area to be exposed when performing tasks that require bending. Furthermore, due to the fact that the average woman's body is shorter in length with narrower shoulders, overalls designed for men tend to be too long in the torso and sleeves.
- Women tend to prefer dark overalls to white overalls for menstrual reasons.
- Women experience problems with the fit and comfort of safety goggles. Safety goggles tend to be too big for women's faces because it is only provided in 'one size fits it all'. Ill-fitting safety goggles can lead to serious health and safety problems if gaps around the seal to the face allow dust particles and other hazardous substances to enter the eye area.

Additional PPE issues were revealed during this research and are discussed in Chapter Six under 6.4.3.1.

Recently, the Mine Health and Safety Council (MHSC) conducted research on PPE issues for women in the South African mining industry. The research was undertaken by Prof. Lindiwe Zungu of Unisa (CM, 2012b:4). During the writing up of this thesis, the draft report on protective clothing for women had been finalised and workshops are being held with industry on the outcomes of the report (DMR, 2013). The main recommendations stemming from the research are the following (CM, 2012b:4):

- A recommendation to set minimum standards for providing undergarments for female workers
- A requirement to set minimum standards for compliance with the provision of PPE for women in mining to be developed as a primary output
- A recommendation that since the industry does not currently design PPE for women in mining, an additional study to facilitate the design of such PPE could be beneficial.

The following section discusses physiological issues that women employed in core mining positions are experiencing.

4.4.4 Physiological issues

Burtenshaw (2005) emphasised the fact that there is a difference between ‘women *in* mining’ and ‘women *at* the mine’. ‘Women *at* the mine’ refers to women who are employed in ‘soft jobs’, such as in administrative positions or as cleaners and sweepers. ‘Women *in* mining’ require that women be placed in positions equivalent to those of men, in other words, they should do the manual labour associated with mining. Women employed in core mining positions encounter specific physiological challenges, which are discussed in the section below.

4.4.4.1 Physical capability

Work in the mining sector is associated with difficult working conditions and mining, especially underground, is considered one of the most physically demanding occupations (Schutte, 2011:11). The nature of working on the mine, and in particular underground, is hazardous and extensive training is required. Many jobs also require a high degree of physical strength and endurance. Mine work includes, among others, the ability to carry heavy objects and to work outside, underground and in confined spaces, often in hot conditions for extended periods of time (Wynn, 2001:34). Therefore, female employees need a sound level of overall fitness to complete everyday work as well as to achieve independence and credibility in the eyes of their co-workers.

Some of the work tasks are difficult to perform due to the physical differences that exist between women and men (Wynn, 2001:33). Due to women’s smaller physical work capacity and physical strength, they may experience undue physiological strain when

performing prolonged and strenuous physically demanding tasks (George *et al.*, 2004:34). Furthermore, much of the mining equipment used in South African mines is designed overseas for use by men, who tend to be significantly taller than the average South African woman (Schutte, cited in Campbell, 2007). The ergonomic features of such mining equipment do not provide for the physiological make-up of women. When mines started to recruit women, mining equipment was still only suitable for men, resulting in both women and men having to share such equipment. Body dimensions are an important concept that should be taken into consideration with the design of mining equipment as well as its efficient operation (Campbell, 2007).

Mine work also requires manual handling of equipment and tools. These equipment and tools are designed to accommodate the size and strength of men (Zungu, 2011). Although many tasks within the industry are being automated, the industry will essentially remain labour-orientated, as it will always include manual tasks (Wynn, 2001:34). These manual tasks can often be related to back injuries and musculoskeletal disorders for workers (Badenhorst, 2009:63). In general, the manual material-handling capabilities of women are substantially lower than those of men. These differences may be attributed primarily to differences in muscle strength. On average, a woman's lifting strength is 60 to 70% of that of a man (George *et al.*, 2004:34). According to Zungu (2011), the need exists to increase awareness and knowledge of the 'safe limits' for women for the handling of mining equipment and tools. Furthermore, women cannot use the same techniques as their male counterparts to lift and handle heavy objects and material. Women's size and body build should be taken into consideration when appointing women in core positions (Zungu, 2011).

Gender differences also exist regarding the aerobic capacity of men and women. Aerobic capacity refers to the maximal oxygen uptake that provides a quantitative measure of a person's ability to sustain high-intensity physical work for longer than five minutes (George *et al.*, 2004:34). According to George *et al.* (2004:34), the aerobic capacity of women is typically 15 to 30% below the values of their male counterparts. This means that women work closer to their aerobic capacity than men and are thus more likely to become fatigued. Fatigue is operationally defined as the "reduced muscular ability to continue an existing effort" (George *et al.*, 2004:34). High levels of fatigue can cause reduced performance and productivity in the workplace and increase the risk of accidents and injuries occurring (Schutte, 2010:54).

Women working on mines, and in particular underground, are also exposed to extreme heat. Singer (2002:1) states that the underground environment can be defined as dark

and damp, and with an increase in temperature relative to an increase in depth. In South African mines, work environments with a wet-bulb temperature higher than 27.4 °C are considered to be hot and necessitate the introduction of practices to safeguard miners (Schutte, 2009). According to George *et al.* (2004:35), all employees who work under 'conditions conducive to heat stroke' should be screened for gross or permanent heat intolerance by means of the standard heat tolerance screening test procedure. Heat tolerance screening is done to assess whether an individual can withstand high temperatures while doing physically demanding work and by doing so protect individuals against the negative consequences of heat exposure, such as heat stroke and heat-related diseases (Benya, 2009:56). In the South African mining industry, heat tolerance screening consists of bench-stepping for 30 minutes in a climatic chamber at an external work rate of approximately 80 W in an environment with a dry-bulb temperature of 29.5 °C and a wet-bulb temperature of 28.9 °C. If the person's body temperature does not exceed a given value at the end of the test, the person is classified as potentially heat-tolerant, indicating that the person is fit to undertake physically demanding work in a hot environment (with wet-bulb temperatures greater than 27.5 °C) (Schutte, 2009:3). Female employees are not given any privileges and must pass the same medical and screening tests as male employees (Singer, 2002:2).

High occupational heat loads can lead to the following problems, among others (Schutte, 2009:1):

- Impaired work capacity
- Errors of judgement with obvious implications for safety
- Lethargy and fatigue
- Complications such as heat stress, which can lead to heat stroke, which is often fatal.

The following personal risk factors, among others, may reduce an individual's tolerance for heat stress (Zungu, 2011):

- Age
- Obesity
- State of hydration
- Use of medication and drugs

- Gender
- Acclimatisation state.

Furthermore, gynaecological conditions and pregnancy could also affect the way in which women handle heat stress (Zungu, 2011). This is discussed further in the following section (under 4.4.4.2).

According to Badenhorst (2009:59), a female employee can do any job that she is qualified to do, provided that she meets the requirements inherent for a specific job. Furthermore, an employee should not be employed in a job or conduct tasks for which he/she is not medically fit or if he/she does not have the required physical and functional capabilities. The health and safety of the employee and co-workers should not be compromised (Badenhorst, 2009:59). Therefore, Badenhorst (2009:70) suggests that a programme be established to ensure that minimum medical requirements are met by employees, which include the establishment of minimum standards for fitness, which comprises the following steps:

Step 1: Occupational health risk assessment

A clearly defined occupational health risk profile should be created for each occupation by identifying all relevant health hazards and the degree to which the various occupations are exposed to these hazards.

Step 2: Man-job specification

The risks for each and every occupation should be documented, which should cover both the inherent requirements of the jobs and the expected hazard exposure(s).

Step 3: Setting standards for medical surveillance

The medical practitioner should set medical standards for each of these occupations based on the risk profiles. This should include standards for physical and functional ability required to perform certain jobs safely. A test battery to conduct and measure these abilities should be established.

From the above discussion it is clear that many jobs at mines make demands on the physical ability, capability and fitness of employees. Some women find it extremely difficult to perform work that requires physical strength and endurance, as also revealed by this research (see Chapter Six under 6.3.3). Therefore, it is important to consider gender

differences and establish a programme to ensure that minimum medical requirements are met by employees, as suggested by Badenhorst (2009:70), prior to appointing an employee in a specific position that requires physical strength and endurance.

4.4.4.2 *Pregnancy*

Pregnancy and breastfeeding are two of the major challenges mining companies have to deal with when incorporating women into the mining workforce. Pregnant employees are strongly protected under South African legislation. The Constitution of South Africa, Section 9 (3), and the EEA, Section 6, explicitly prohibit unfair discrimination against anyone or any employee on the grounds of pregnancy (RSA, 1996:1245; RSA, 1998:7). Furthermore, the BCEA (RSA, 1997:14) provides for the following:

- Section 25 states that “a pregnant employee is entitled to at least four months’ consecutive maternity leave”.
- According to Section 26 (1), “[n]o employer may require a pregnant employee or an employee who is nursing her child to perform work that is hazardous to her health or the health of her child”.
- Section 26 (2) states that “[d]uring an employee’s pregnancy, and for a period of six months after the birth of her child, her employer must offer her suitable, alternative employment on terms and conditions that are no less favourable than her ordinary terms and conditions of employment if:
 - (a) the employee is required to perform night work or her work poses a danger to her health or safety or that of her child; and
 - (b) it is practicable for the employer to do so”.

In addition, the Code of Good Practice on the Protection of Employees during Pregnancy and after the Birth of a Child (Israelstam, 2012) aims at protecting pregnant and post-pregnant employees, and obliges employers, among others, to:

- encourage female employees to inform the employer of their pregnancy as early as possible so as to ensure that the employer can assess risks and deal with them;
- evaluate the situation of each employee who has informed the employer that she is pregnant;

- assess risks to the health and safety of pregnant or breastfeeding employees within the workplace;
- implement appropriate measures to protect pregnant or breastfeeding employees;
- supply pregnant or breastfeeding employees with information and training regarding risks to their health and safety and measures for eliminating and minimising such risks; and
- maintain a list of jobs not involving risk to which pregnant or breastfeeding employees could be transferred.

Employers should also consider the following aspects of pregnancy that can affect women's work (Pons & Deale, 2010: ch. 20, p. 34):

- Employees may be unable to perform early shift work due to morning sickness.
- Exposure to nauseating smells may also aggravate morning sickness.
- Backache and varicose veins may result from work involving prolonged standing or sitting.
- Backache may also result from work involving manual handling.
- Frequent visits to the toilet will require reasonable access to toilet facilities. The position of employees must be taken into consideration, in particular if her work cannot be left unattended.
- The employee's increasing size and discomfort may require changes of protective clothing and may impair dexterity, agility, co-ordination, speed of movement and reach.
- Tiredness associated with pregnancy may affect the employee's ability to work overtime and to perform evening work.

A major concern for mining companies is that women are often afraid to disclose their pregnancy. If women do not disclose their pregnancy, the implications can be two-fold. On the one hand, it could have health and safety implications for the pregnant woman as well as her unborn baby. On the other hand, pregnant women can pose a health and safety risk to mining operations. Women often do not disclose their pregnancy for reasons such as fearing that they will not be able to continue working and/or fearing that it would

disqualify them from getting maternity benefits if they recently joined the company (IFC-Lonmin, 2009:35).

Most women can continue work during pregnancy; however, the nature of the job and the risks associated with the job will determine for how long she will be able to perform the specific requirements of the job. Mining companies should have a standard and systematic process for alternative placement in place to accommodate pregnant and breastfeeding women; as such, this also has unique challenges of its own, for example the availability of jobs on the surface for placement of pregnant employees. According to Badenhorst (2009:59), risk assessment is fundamental to the safe placement of female employees prior to or during pregnancy. Badenhorst (2009:60) suggests the following risk-assessment flow (see Figure 4.1) to be followed to ensure that pregnant and/or breastfeeding female employees are not exposed to significant risk in the workplace.

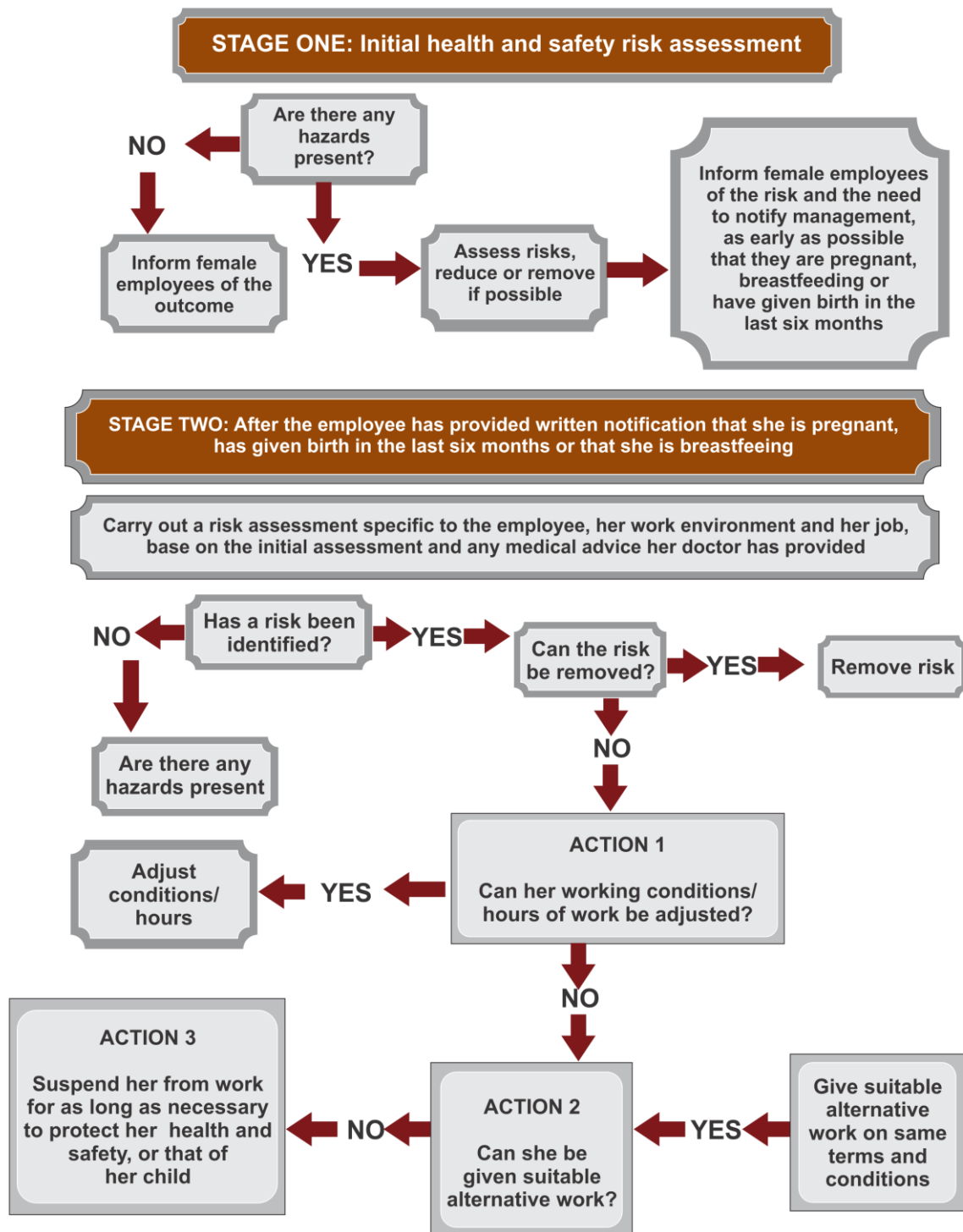


Figure 4.1: Risk-assessment process for pregnancy and/or breastfeeding employees

Source: Badenhorst (2009:60)

The following section discusses additional health and safety issues that need to be considered when integrating women into the mining workforce.

4.4.5 Health and safety issues

Work in the mining sector is categorised as high-risk work and falls into the category of perceived hazardous occupations. “Mining involves hard physical labour under conditions of extreme discomfort, deafening noise, intense heat and humidity and cramped space” (Zungu, 2011:8). Mine workers often experience anxiety and tension due to the high risk of potential hazards and danger.

The MHSA enforces and promotes the health and safety of persons at work in the mining sector (see Chapter Three under 3.2.3.2). The MHSA of 1996 has been updated by the Mines Health and Safety Amendment Act of 1997. The Act introduced the concepts of risk assessment and occupational health and safety management to the mining industry. Great emphasis has been placed on the reduction of mining-related deaths, injuries and diseases. Furthermore, the Safety and Health in Mines Convention C176 of 1995 was ratified by South Africa on 9 June 2009. It recognises the desirability to prevent any fatalities, injuries or ill health affecting workers or members of the public, or damage to the environment arising from mining operations (Zungu, 2012:7).

Despite the improved efforts from government (specifically the DMR) to promote health and safety in the mining industry, the safety track record in the South African mining industry continues to be a matter of great concern to the Department. In 2011 only, a total of 123 mine deaths in South Africa were reported (CM, 2012a:54).

Occupational health impacts in the mining industry are not immediate and are therefore difficult to quantify. The following impacts are regarded as significant health hazards in the mining industry (DMR, 2011a:16):

- Silicosis, due to excessive dust exposure, remains a major cause of premature retirement and death at South African mines.
- Tuberculosis continues to be a serious challenge for the mining industry and is exacerbated by HIV and Aids.
- Noise-induced hearing loss, due to exposure to high levels of noise in workplaces, is also regarded as a significant health hazard.

According to Pule (2011:4), employees working in mines are exposed to the following risk factors:

- Mechanical hazards

These refer to hazards related to the use of tools and machines. If not properly utilised, they may result in severe accidents. Although mining has become increasingly mechanised, it still involves a substantial amount of manual handling. These activities performed manually could also lead to injuries and disorders. Overhead work, for example, is a common phenomenon underground, performed during ground support and during the suspension of pipes and electrical cables. This could cause or exacerbate shoulder disorders.

- Physical hazards

These relate to hazards that can cause physical and physiological harm, such as exposure to dust, noise and extreme heat. The combination of hazardous conditions caused by dust, heat and, at times, long hours of work, may contribute to fatigue and loss of attention and can result in accidents.

Donoghue (2004:283) identifies the follow physical hazards related to mining:

- Noise is almost ubiquitous in mining and is generated by drilling, blasting, cutting, materials handling, ventilation, crushing, conveying and ore processing. It is difficult to control and can result in hearing loss, which remains common in the mining industry.
- Heat and humidity are encountered in deep underground mines, where the virgin rock and air temperatures increase with depth. Heat exhaustion and heat stroke are related to deep underground mining and remain a problem in the deep underground gold mines of South Africa.
- Whole-body vibration is commonly experienced while operating mobile equipment such as load-haul-dump units, trucks, scrapers and diggers. This can result in spinal problems. Hand–arm vibration syndrome is also encountered while using vibrating tools, such as air leg rock drills.
- Radon daughter exposure in underground mining may increase the risk of lung cancer, but is controlled by mine ventilation.
- Solar ultraviolet exposures in surface mining operations may contribute to the occurrence of squamous cell and basal cell carcinomas.

- Infrared exposures in pyrometallurgical processes may contribute to heat stress and may induce cataracts. Electromagnetic fields are encountered in electrolytic smelting and refining processes.

Traumatic injury remains a significant problem in the mining sector and ranges from trivial to fatal. The following accidents or activities may lead to fatal injuries: rock falls, fires, explosions, mobile equipment accidents, falls from height, entrapment and electrocution. Less common causes of fatal injury include flooding of underground workings, wet-fill release from collapsed bulkheads and air blast from block caving failure (Donoghue, 2004:283).

- Chemical hazards

Explosives contain chemical material and are used in mining operations to break rocks. When not properly handled and utilised in underground operations, in places not well ventilated, they may cause various health problems, such as eye, skin and respiratory problems.

- Biological hazards

Mining is often associated with poor working conditions, with employees' limbs exposed to biological hazards such as snakebites and injuries.

- Psychosocial hazards

Mine work is often associated with long and awkward hours. Furthermore, mining and mining activities are also associated with remote locations and migration. Workers may often be away from home for many days and therefore experience times of loneliness and isolation. They are also exposed to various risks, such as sexually transmitted infections and malnourishment. These factors can affect their personal lives and can result in, among others, anxiety. Drug and alcohol abuse is also a common phenomenon related to mining. Fatal and severe traumatic injuries continue to occur in mining and have an effect on the morale of mine workers. This can result in post-traumatic stress disorders in witnesses, colleagues and managers (Donoghue, 2004:285). Female mine workers may experience acute and chronic stress reactions, which may result from feelings of discrimination in a male-dominated work environment as well as conflicts associated with balancing work and family life (Zungu, 2011:10).

- Ergonomic hazards

According to Schutte (2011:12), mineworkers are also exposed to ergonomic-related hazards. The author states that mining equipment used in narrow reef mining operations is frequently designed only for functionality without considering basic ergonomic principles. Ergonomic-related hazards include, among others, restricted vision from the driving position, restricted driver cabin space, difficult vehicle access for the operator and exposure to whole-body vibration, noise and dust.

Historically, women were prohibited from working in core mining positions and were thus excluded from the high-risk work associated with mining. But now the situation has changed. Women are employed in core mining positions and are exposed to the various hazards mentioned above. Furthermore, women working in the core business of mining have unique health and safety needs due to their anatomical and physiological makeup. Hermanus (2007a:532) states that women in mining face greater risks to their safety than men because they use machinery, tools and equipment that have been designed for men. She further states that women face increased risks of injury and ill health due to the physical demands of mining. In addition, the following hazards are regarded as reproductive hazards for women: heavy physical work, ionising radiation, inorganic solvents and toxic metals (Hermanus, 2007b:7). Ill-fitting PPE, such as shoes, safety goggles, harnesses and overalls, could also pose a health and safety hazard to female employees. For example, poorly fitting safety eye goggles could allow exposure to dust particles from silica and other hazardous chemicals and could lead to eye damages. Dust, when inhaled, could cause systemic and lung diseases and other respiratory ailments (Zungu, 2012:10).

It is therefore important that specific attention is given to the promotion of health and safety for women working on mines. Hermanus (2007a:537) suggests that a more holistic approach to risk management, which includes consideration of gender implications and ergonomic factors, is needed if the participation of women is to be sustained in mining. Zungu (2011:9) states that mining companies need to consider the following aspects that could have an impact on the health and safety of women working in the core business of mining:

- The availability of welfare facilities underground
- Physiological changes and psychological vulnerability inherent among women that may affect their health and safety at work

- The impact of heavy physical work on a women's body, as it is often regarded as a reproductive hazard
- The impact of shift work on women's family lives
- Resistance by their male counterparts to fully accept and regard them as equal work partners
- Machinery, equipment and tools designed for use by men
- Risk implications of PPE designed for men, and not adapted for women.

In addition, the union Solidarity states that the following aspects could also have an impact on the health and safety of women employed in core mining positions and need to be considered (Mining Safety, 2013):

- The tough working conditions of the mining environment, combined with the traditional family responsibilities of women in households and society, add to increased stress and fatigue and therefore increased risks for women in mining.
- Toilet facilities underground are often shared with the men, and could cause anxiety for women.
- Gender discrimination and sexual harassment could affect women's psychological health, generating stress-related reactions such as emotional trauma, anxiety, depression, anger and low self-esteem, but also affect their physical health, causing stress-related diseases such as sleep disorders, headaches, stomach problems and ulcers.

Research is currently being undertaken, through the MHSC, on health and safety issues for women in the industry (DMR, 2013). Safety, health and wellness are the responsibility of managers; they should ensure that employees are not unnecessarily endangered and that workers are fully aware of and properly trained and prepared for unusual workplace risks. A safe and healthy work environment can have a positive impact on the physical and psychological wellbeing of employees as well as on the productivity of the company (Nel *et al.*, 2011:283).

4.4.6 Management issues

The integration of women into the mining workforce requires a special commitment and devotedness from management. The following measures should be considered when integrating women into the workforce.

4.4.6.1 Policies

Integrating women into the mining environment also requires from mining companies to introduce policies and procedures that are gender-sensitive and cater for the specific needs of women. These policies should be in line with the legislation of South Africa. The following key policies, among others, should be developed: an employment equity policy, a pregnancy/maternity policy and a sexual harassment policy. The content of the policies should be communicated to employees (Grobler *et al.*, 2006:14).

4.4.6.1.1 Employment equity policy

According to Bendix (2005:136), an employment equity policy entails, among others, the guidelines to mandate managers to:

- identify and eliminate employment barriers, including unfair discrimination, which adversely affects persons from designated groups;
- promote diversity based on equal dignity and respect for all people;
- accommodate persons from designated groups to ensure that they enjoy equal opportunities and are equitably represented in all occupational categories and groups; and
- retain and develop people from designated groups and implement appropriate training measures.

The Code of Good Practice: Preparation, Implementation and Monitoring of Employment Equity Plans provides the guidelines of good practice in terms of the requirements of the EEA for the preparation and implementation of an employment equity plan (Pons & Deale, 2010: ch. 20, p. 47).

4.4.6.1.2 Pregnancy policy

A pregnancy policy provides guidelines for employers and employees regarding the handling of pregnant and breastfeeding women and may include guidelines on the

alternative placement of women during these times. Furthermore, The Code of Good Practice on the Protection of Employees during Pregnancy and after the Birth of a Child provides further guidelines to employers and employees concerning the protection of the health of women against potential hazards in their work environment during pregnancy, after the birth of a child and while breastfeeding (Pons & Deale, 2010: ch. 20, p. 29).

4.4.6.1.3 Sexual harassment policy

Women appointed in core positions work side by side with men and are often at risk of sexual abuse and/or harassment. Furthermore, employees working underground in the mine are in very close proximity to one another while being transported from the surface to the workplace underground, which often also increases the risk of sexual harassment. According to Shabangu (2012:4), South African Minister of Mineral Resources, the number of reported incidents of women miners experiencing harassment and inhumane treatment by fellow workers in their underground workplaces is of particular concern. Shabangu (2012:4) emphasises that “no woman should experience any sort of intimidation at the workplace that inhibit her to be the best and most productive employee she can be”. Therefore, it is of paramount importance that mining companies introduce a ‘good working’ sexual harassment policy to protect all employees.

According to the Code of Good Practice on the Handling of Sexual Harassment Cases (Pons & Deale, 2010: ch. 20, p. 18), employers should issue a policy statement that covers the following:

- All employees have the right to be treated with dignity.
- Sexual harassment in the workplace will not be permitted or condoned.
- Persons who have been subjected to sexual harassment in the workplace have a right to raise a grievance about it should it occur and appropriate action will be taken by the employer.

The policy should also explain the procedure that should be followed by employees who are victims of sexual harassment. Management should implement the policy and communicate the details of the policy to all employees (Grobler *et al.*, 2006:14).

4.4.6.2 *Retention of women in mining*

Increasing the percentage of women working in the mining industry, and particularly in core positions of the mining industry, is official government policy in South Africa, enshrined in the Mining Charter. While impressive progress has been made, much more has to be done to increase female participation in the mining industry. As indicated in Chapter Three under 3.2.3.5 (b), the Mining Charter impact assessment conducted by the DMR revealed that the average rate of women participation in the mining industry is 6%, of whom most are occupied in supportive functions, and less than 1% hold core management positions.

One of the problems mining companies experience is the retention of their 'female workforce', which includes its technical staff, for example geologists and mining engineers, as well as the production staff, in other words the mine workers. Reichardt (cited in Campbell, 2007:2) states that these employees, and in particular university graduates, are headhunted. The problem is not that they are headhunted by other mining companies, but that it is done by companies outside the mining industry that offer them less physical, more comfortable jobs with higher salaries and higher social status, which are therefore more family-friendly. These companies are often based in the major cities and not in mining towns or rural areas.

Furthermore, Reichardt argues that part of the problem is that mining companies do not use vacation jobs required of their bursars to introduce them properly into the realities of life and work on the mines. The shock when student graduates arrive on the mines can be so unpleasant, due to a lack of knowledge, that they 'jump ship' at the first suitable opportunity. She emphasised that mining companies should invest in the proper skills development of women, including students.

Other issues that can cause female employees to leave include the social environment underground, which is very 'macho' and hostile to women, fear or experience of sexual harassment and/or sexual intimidation or assault, the inability to cope with the physical challenges of underground work, and the fact that even if they can cope, they find the physical environment too unpleasant (Campbell, 2007:2). Traditionally, mining and exploration are perceived as extremely physical work accompanied by a noisy, dirty and harmful environment. Technology has addressed many of these challenges; therefore, this perception is not true of all occupations in the mining sector. However, these perceptions existing from the past may continue to influence the perception women have

about today's mining sector and may continue to deter women from considering a career in the industry (Women in Mining Canada, 2010).

Stereotypical images from the past of a sector unfriendly to women may also continue to influence the perceptions women have about today's mining sector and may create a barrier that deters some women from considering a career in the sector. A lack of role models and mentors to guide female employees as well as a lack of awareness of career opportunities in the mining sector may also contribute to the fact that women do not choose the sector as a career destiny (Women in Mining Canada, 2010:10). Another issue that can hinder mining companies in retaining their female workforce is the issue of pregnancy, as discussed in 4.4.4.2.

According to Heine (2010), there are three requirements crucial for further transformation in the mining industry, namely (1) build confidence, (2) encourage true self-esteem and (3) teach self-respect. These issues limit women in career selection and advancement in the industry and need to be addressed in order to ensure the sustainable employment and advancement of women in the industry.

Taking the above into account, mining companies need to consider specific strategies to retain women for the industry and to meet the requirements set by the Mining Charter. According to Dessler *et al.* (cited in Net *et al.*, 2011:225), retention can be defined as "redesigning a range of human resource activities to provide increased job satisfaction and, as a result, improved employee commitment leading to reduced turnover". These activities could include the following, among others (Net *et al.*, 2012:378):

- Offer better-than-average remuneration
- Provide support for good-quality work–life programmes
- Provide benefits that could be extended to the family
- Offer positions that are linked to recognition and status
- Train managers to enhance their relationships with their subordinates. This training should cover communication skills such as asking open-ended questions, listening actively, giving clear instructions, giving feedback and motivating employees
- Improve supervisor–employee relationships, which should be viewed as an ongoing process and not as a once-off event
- Use retention bonuses to reward employees for staying with an organisation for a defined period of time

- Accept people's individual behavioural differences
- Deal effectively with conflict in the workplace
- Identify and attract good candidates in the recruitment and selection process to ensure that employees do not only possess the skills that are needed, but also demonstrate an attitude that promote commitment.

4.4.6.3 *Training and development*

Globally, one of the main challenges that women are facing in the mining industry is insufficient professional and career development, which include poor mentoring systems and career paths, as clearly indicated in the discussion under 4.2 and reinforced by the findings of this research (see Chapter Five under 5.4.3). Furthermore, historical imbalances in terms of women's access to education also prevented them from participating in the mining industry. At institutions of higher learning, women were under-represented in the technical and science disciplines. Therefore, they did not have the necessary skills required by the mining industry and were not prepared to be employed in the more technical positions within the mines (Moyo, 2010:62). According to research done by Moyo (2010:62), women indicated that skills development and training are not freely available and that they are seldom specifically targeted for bursaries and scholarships. This view is also supported by the findings of this research (see Chapter Five under 5.4.3.3).

Training and development are important for both employers and employees. Effective training and development could enhance productivity, personal satisfaction and job enrichment (Nel *et al.*, 2012:380). Training and development can also affect work behaviour. Firstly, skills are improved and the employee will be able to complete the job successfully. Secondly, it can increase an employee's self-efficacy (Robbins *et al.*, 2009:467).

The legislative framework to promote and enhance learning and skills development in South Africa is provided by the South African Qualifications Authority (SAQA), the Skills Development Act (97 of 1998) and the Employment Equity Act (55 of 1998) (Pons & Deale, 2010: ch. 19, p. 4). Also see Chapter Three under 3.2.2.3, 3.2.2.4 and 3.2.2.5.

Nel *et al.* (2012:380) suggest the following guidelines for the effective training and development of employees:

- All employees have the right to training and to develop their full potential, but designated employees require fast-tracked development.
- All employees should be informed of training opportunities and encouraged to develop their careers whenever such opportunities arise.
- The application requirements and procedures for training programmes should be clearly defined, followed and made available to all employees.
- Specific training programmes should be developed to facilitate employees' adjustment to structural change and technological innovation in the workplace.
- Training programmes should be provided to allow people who have been historically disadvantaged to compete equally for promotion in the labour market.
- Training programmes should be designed to develop workers' existing skills to the required standard. Recognition of prior learning should be given wherever possible.
- Training programmes should be designed to improve low-level workers' written and spoken communication and general basic education should be provided.
- Where a worker lacks the necessary general or further education to enter a training programme, education should be provided through special programmes of assistance, for example bursaries.
- Training programmes, procedures, manuals and materials should be regularly reviewed, updated and changed to ensure that employees are not being unfairly discriminated against.

Various training and development approaches could be followed. It could be delivered 'on the job' or 'off the job'. According to Nel *et al.* (2011:377), "[o]ff-the-job training refers to training that is undertaken away from an employee's workplace" and "[o]n-the-job training involves structured job focus on delivery methods that usually lead to the assessment of the employee whilst being on-the-job". On-the-job training could include, among others, coaching, job rotation, job instruction training, mentoring and learnership training.

Work in the mining environment requires a specific set of skills and extensive training is needed. Therefore, it is important for mining companies to empower their female employees by providing adequate training and skills development opportunities. This will also contribute towards the sustainable deployment of women in the industry.

4.4.6.4 Diversity management

Transformation of the total labour force of South Africa is endorsed in various pieces of legislation, as indicated in Chapter Three. Furthermore, the Amendment of the Broad-based Socio-economic Empowerment Charter for the South African Mining and Minerals Industry provides set targets for participation by HDSAs, including women, which should be reached by March 2015 (see Chapter Three under 3.2.3.6.4). The successful integration of women into the traditional male-dominated workforce of the mining industry created and still creates challenges for mining companies.

According to Nel *et al.* (2012:384), organisations in South Africa, including mining companies, are becoming increasingly diversified and consist of all subgroups of society. Therefore, diversity and the management of diversity have become important factors in all organisations. Noe *et al.* (2012:320) maintain that diversity can be considered as any dimension that differentiates a person from another. Nel *et al.* (2012:384) refer to diversity as the full spectrum of differences represented in the general population, which encompasses more than merely race and ethnicity. It includes, among others, age, ability, gender, religious affiliation, personality, social status and sexual orientation.

The way organisations manage the changing demographics of their workers could have an effect on employees' morale and the productivity and success of the organisation (Nel *et al.*, 2012:387). An environment should be created in which all employees, regardless of differences, could contribute to organisational goals and could be developed. Organisations should build an environment in which employees are comfortable working with people from different ethnic, racial and religious backgrounds (Noe *et al.*, 2012:321).

There are various approaches to dealing with diversity in the workplace. To enhance diversity as a strategic and transformational goal, emphasis should be placed on equal opportunity, fair treatment, recruitment and compliance legislation. Furthermore, attention should be given to diversity awareness training, knowledge training and transference of diversity skills. This could for example include communications skills, building teams of diverse backgrounds and treating young and older employees as separate groups in terms of diversity training issues (Nel *et al.*, 2012:385).

In order to successfully manage a diverse workforce, Noe *et al.* (2012:39) point out that it is important for managers to develop a new set of skills. These skills include the following:

- Communicating effectively with employees from a wide variety of cultural backgrounds
- Coaching and developing employees of different ages, educational backgrounds, ethnicity, physical ability and race
- Providing performance feedback that is based on objective outcomes rather than values and stereotypes that work against women, minorities and handicapped persons by prejudging these persons' abilities and talents
- Creating a work environment that makes it comfortable for employees of all backgrounds to be creative and innovative
- Recognising and responding to generational issues.

If diversity is positively managed, it can lead to increased creativity, innovation in organisations and improved decision making in which different perspectives are provided. On the other hand, if not properly managed, it could lead to a high turnover of employees, more difficult communication and more interpersonal conflicts (Robbins *et al.*, 2009:13).

In the light of the above, it is important for mining companies to show commitment to the transformation agenda of government by fostering an environment in which people's differences could be respected. Diversity training should be conducted on a regular basis in order to create awareness for 'diversity issues' among employees.

4.4.6.5 Gender mainstreaming

"Gender mainstreaming can be understood as the institutionalization of gender equality that is achieved by embedding gender sensitive-practices and norms in structures, processes and environments of public policy" (Daly, cited in Lahiri-Dutt, 2011:6). According to Lahiri-Dutt (2011:6), for the mining sector, gender mainstreaming is an organisational strategy to be applied internally and externally as a means of bringing a gender perspective to all aspects of an organisation's policies and activities in order to build gender capacity and accountability. This implies bringing a gender perspective and integration of gender analysis into all stages of the design, implementation and evaluation of all projects, policies and programmes (UNDP cited in Lahiri-Dutt, 2011:6). Thus, gender mainstreaming is applicable to the industry in making both women and men visible in their roles and contributes to giving a voice to women as well as men (Lahiri-Dutt, 2011:6). According to Lahiri-Dutt (2011:7), gender equality can be applied vertically and horizontally within a mining organisation. The vertical approach would include the creation

of a separate unit or department to deal with gender equity issues, such as developing a gender policy, addressing gender issues in the workplace and providing gender training as part of staff inductions. The horizontal approach would require the application of a 'gender lens' to every aspect of the organisation's work. This would include examining how each and every policy or project affects women and men differently, and ensuring that women do not bear the majority of negative impacts.

Lahiri-Dutt (2011:13) points out five areas of concern in order to engender the mining field. The first area of concern is policy evaporation. According to the author, the assumption exists that engendered participatory processes will automatically feed into industry policy. Gender is often treated as a 'soft' issue and policy evaporation occurs due to a lack of clear-cut indicators. The author suggests that policy evaporation can be prevented by mainstreaming gender as a critical aspect of the reporting process in companies.

The second area of concern is the conceptual confusion that arises when mining companies continue to use the WID (Women in Development) approach instead of the GAD (Gender and Development) approach. Since the 1980s, feminists highlighted the need to shift the focus from 'women' to 'gender'. The WID approach primarily addresses women's practical needs and interests through women-only projects and organisations instead of their strategic needs and interests. A WID approach will continue to target female problems in isolation, such as women's reproductive health problems. A GAD approach in the mining field will, among others, critique the development process itself by highlighting the effect of capitalist mining and industrial development on the productive and reproductive lives of women. Furthermore, a GAD approach focuses on empowerment and participatory processes. It offers a more radical agenda that can address the bases of inequalities between women and men, and redistribute the power inherent in gender relations. It would involve the analysis of inequalities between men and women and will propose measures that can address those inequalities. Men would also be involved in projects to help, support and advocate gender equality. In a GAD approach, women should be included and involved in participatory negotiations and consultations for better results (Lahiri-Dutt, 2011:14).

The third area of concern is a mining culture that includes the attitudes and beliefs of the main actors in the industry. Internationally, the general perception exists that mining is a 'macho' environment, which therefore hampers the use of a 'gender' lens in terms of staffing patterns, procurement and community development work. For effective gender mainstreaming to take place, staff with the knowledge of, skills for and commitment to gender issues in the workplace are required. According to Lahiri-Dutt (2011:14), the

mining industry lacked strength in these areas due to a lack of gender and equity policies, induction processes that do not include training in gender and equity issues and staff that are not aware of and exposed to the importance of gender issues.

The fourth area of concern is the role played by national laws. Lahiri-Dutt (2011:15) emphasized that laws relating to work and employment in individual countries can play a dual role in hindering gender equity. On the one hand, EEO and anti-discrimination legislation in some countries, such as the USA and Canada, can create the illusion that gender equity exists in all spheres of life because of the existence of such laws. On the other hand, in other countries, for example Indonesia, laws relating to women's economic citizenship remain discriminatory. Discriminatory laws may sometimes exclude women from taking advantage of economic opportunities. Furthermore, the existence of laws tends to give the impression that adequate measures are in place for achieving gender equality. Many countries have constitutions that appear 'women-friendly', but in reality, women's rights are not realised in daily life. The author believes that by mainstreaming gender within the sustainable development framework in the extractive industries, it will be easier for them to lobby national governments on women's right to mining work.

Finally, as women enter employment in the mining industry, the need exists for a better understanding of the mining organisation as a workplace, including both office work and mine work. A culture of gender equity in the mining industry should be developed. Workplace issues should be addressed by developing rules (policies and procedures) for sexual harassment, workplace bullying and gender-based health and safety. The number and position of women in the organisational structure relative to men are still lower. Furthermore, women are still concentrated in lower-paid jobs within the industry. Addressing these workplace issues by a gender-based approach instead of a 'women-only' approach will lead to more success. The employment of indigenous women, for example, must be accompanied by measures to ensure career development of these women. Gender stereotyping in the organisation should be avoided. This includes arguments such as 'women are safer' (in their operational behaviour), 'women take fewer risks' (when driving trucks) and 'women take better care of machines'. These statements create the perception that women should only be hired because they are more compliant or cost the company less (Lahiri-Dutt, 2011:16).

As indicated in Chapter Three, the promotion of gender equality, equity and the empowerment of women is enshrined in various pieces of South African legislation. Furthermore, the South African democratic government endorsed key international and national protocols in order to promote and protect women's rights in society (the home

and the community) as well as the workplace (Chapter Two under 2.5.2). The participation of women in the mining industry is also enforced by new mining legislation (see Chapter Three under 3.2.3). It is therefore important for management of mining companies to develop and implement an action plan, taking the above measures suggested by Lahiri-Dutt (2011:13) into consideration, for mainstreaming gender in the mining workplace.

4.4.7 Conclusion

From the section above it is clear that the introduction of women into the traditional male-dominated workforce is accompanied by various challenges, not only for management of mining companies but also for the women employed in core mining positions and their male co-workers. The successful and sustainable integration of women into the mining workforce requires commitment and devotedness from all three these parties. It is important for mining companies to take note of all these issues mentioned and to develop a strategy to ensure the successful and sustainable participation of women in the mining industry. According to Cynthia Carroll (Berman, 2008), former CEO of Anglo American, the challenges in the mining sector are not radically different from those presented by other industries. She described the mining sector as an “exciting, challenging and rewarding environment in which to work”. She believes that “people are judged on their delivery and performance irrespective of their gender”. Carroll was the first woman to become CEO of Anglo American in its 90-year history, indicating her pioneering role not only in mining, but also in business.

4.5 CHAPTER SUMMARY

This chapter provided an overview of global and national trends and perspectives regarding women in mining. Firstly, an international view of women in mining was given by exploring the involvement of women in the mining industry in North America, Australia, China, Papua New Guinea and Africa. It became evident from the literature review that women are involved in various activities of the formal and informal mining sector, but that the number of women in the sector remains extremely low, in most countries and continents below 10%. Furthermore, despite social and cultural differences of the mining workforces, globally, as well as the diverse mining operations conducted, it is clear that women across the globe are facing more or less the same challenges in the mining industry.

Secondly, a national perspective on women in mining was given by discussing the involvement and integration of women in the South African mining industry. Although it is

evident that great progress had been made so far to integrate women into the core business of mining, there is still a long way to go to successfully and sustainably ensure women's participation in the mining industry. Although the numbers had risen, women are still not properly represented in the sector. More women should be employed in core as well as management positions in the mining industry.

Thirdly, the various challenges that the different role players, women, male co-workers as well as management are facing with the deployment of women in the core business of the industry were outlined and discussed. To employ women in the core business of mining is not an easy task at hand for managers. A special commitment and devotedness from the different role players are needed in order to ensure the successful and sustainable participation of women in the mining industry. Although the South African government has put in place a range of equity legislation and programmes to address the recruitment and advancement of women in the mining industry, the need still exists to fully understand the barriers that affect the deployment of women in the industry. The conceptual framework developed through this study could be utilised by various stakeholders (for example management and state departments) to contribute to the sustainable deployment of women in the industry (see Chapter Eight).

Consequently, the following chapters report on the empirical findings of the research. The findings are presented in three consecutive chapters. Chapter Five presents the biographical information, and the first two main themes are reflected on, namely *Company procedures and policies*, and *Workplace opportunities*. Chapter Six provides the main findings on *Infrastructure facilities*, *Physical ability*, and *Health and safety in the workplace*. In Chapter Seven, findings related to *Workplace relations* and general issues regarding the deployment of women in mining are revealed and discussed.