

The impact of mining on women: lessons from the coal mining Bowen Basin of Queensland, Australia

Sanjay Sharma

The select indicators of gender equity from the Australian Bureau of Statistics Census 2006 reveal that women of the mining towns of the Bowen Basin region of central Queensland are at a substantial social and economic disadvantage to men. Through a review of select social science literature on mining communities the paper examines work, family and community structures and processes that promote and sustain patriarchy in mining communities and within households that could negatively influence mental health and relationship wellbeing of women in mining towns. This is a relatively neglected field of inquiry in the social impact assessment processes of large-scale mining in Australia. The paper suggests areas of research and policy initiatives to enhance women's economic self-sufficiency, gender equality and wellbeing.

Keywords: SIA, mining towns, status of women, Bowen Basin, patriarchy, role overload

While technical and economic issues are carefully reviewed in the mine planning and environmental assessment stages of a [mining] project, how the project will affect individual, family, and community health is seldom scrutinized ...

(Kuyek, 2003: 121, quoting the Yukon Conservation Society)

The impacts of mining operations are not gender neutral. Women can experience the direct and indirect consequences of mining operations in different, and often more pronounced, ways than men.

(Oxfam Australia, 2009: 7)

SOCIAL IMPACT ASSESSMENTS (SIA), in particular of large-scale mining projects, are conducted to analyse, monitor and manage the intended and unintended, positive and negative social consequences of planned interventions. The goal of impact assessment is to bring about a more ecologically, socio-culturally and economically sustainable and equitable environment (Vanclay, 2003). To

achieve the desired objectives SIA 'encompasses empowerment of local people, enhancement of the position of women, minority groups and other disadvantaged members of society, development of capacity building, alleviation of all forms of dependency, increase in equity and a focus on poverty reduction' (Becker and Vanclay, 2003: 3). It is often observed that impact assessments seldom consider the gender-specific assumptions and implications of project development (Goudie and Kilian, 1996). The companies within the resource extractive industries often treat women in the resource-dependent communities as a homogenous and undifferentiated social category at the micro level and they are seldom included in decision-making on the day-to-day operation of projects that could influence their lives. Further, their inputs — as housewives of mine

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workers — to the industry are seldom recognised (Gibson, 1992, 1994; Rhodes, 2003, 2005).

In the resource extractive industry in Australia, social impact assessments are undertaken as a subset of environmental impact statement at the project permitting stage. Although companies governing resource extraction are sensitive and responsive to sustainable resource management, certain policies and programmes during the operation of mines, and processes within communities, may lead to unintended consequences at the micro level that promote and sustain gender inequality within the domains of family and community, negatively affecting the wellbeing of women.

It is often suggested that the lives of women in the remote mining towns of Australia are affected by range of factors. These include harsh climatic and structural conditions of the towns, physical separation from friends and relatives, limited resources and opportunities available in remote localities and atypical work schedules of mining jobs. Dependent women often have to accommodate their lives to the cultural ethos prevalent in these communities. At the same time strong anecdotal evidence suggests that there is a high rate of divorce in mining communities. However, seldom are the several factors analysed in detail to ascertain the status of women living in atypical social, economic and cultural environments of resource-energy based regions of the country that could exert structuring effect on their wellbeing.

Rural and remote mining towns exemplify a unique social entity in time and space where the functioning of resident families and the community is influenced by a cultural environment determined by the occupational community of single industry male mine workers (Bulmer, 1975; Strangleman, 2001; Wicks, 2002; Somerville, 2005). In the light of the ecological system theory (Bronfenbrenner, 1989; Voydanoff, 2001 a,b) it could be argued that remote mining towns represent a typical example of a mesosystem within a larger social context

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(macrosystem) where the three microsystems — the work, family and the community — are intricately interrelated; in the process, the wellbeing of women, because of their structural positioning within the domains of work, family and community, is highly likely to be affected.

Further, the sociological definition of mental health and wellbeing suggests that the unequal distribution of resources and opportunities, and a low status within social structures, are often a source of stressful life conditions, and the incumbency in a major institutionalised role (e.g. a wife) necessarily entails persistent encounters with a host of conditions and expectations that exert a structuring force on experience. When these experiences are threatening and problematic they result in stress (Pearlin, 1989) and are expressed in various forms of relational difficulties and psychological problems. However, little is known about women living in atypical environs of remote mining towns in Australia. A study has identified women as one of the several issues of social science research that is under-researched within the domain of the mining industry in Australia (Solomon *et al*, 2007).

Statistical information provided by census and surveys plays a vital role in determining human development at all levels. This data could help develop a profile of the status of women of a geographical region to facilitate initiatives and strategies for the development and realisation of human capital of either gender, gender equality and wellbeing. Using the ABS (Australian Bureau of Statistics) Census¹ 2006 data, this paper assesses the social and economic status of women vis-à-vis men living in the inland resource-energy based mining towns of the central parts of the State of Queensland. Through a review of select literature, the paper examines the social structures and processes in these communities and families that may have implications on the psychological and relationship wellbeing of demographically disadvantaged resident women of the region.

Wellbeing of women in mining towns in Australia: a review of literature

The minimal literature that is available spans several decades. Gender in particular, and social issues in general, in Australian mining communities are rarely given prominence and the research literature is patchy. The contextual relevance of the dated literature to contemporary mining communities has its own limitations as the industry, infrastructures, technologies and societal norms have radically changed over the past few decades. Still, the available literature shows the challenges faced by women of the mining communities in Australia over the decades.

Three decades ago it was observed that there were high incidences of various psychological problems

and disorders among the residents of new, remote resource communities who live in adverse climatic conditions (Burvill, 1975; Siemens, 1976). Further, the incidences of incipient psychological problems were high among the female partners of the mine workers (Burvill, 1975). Several explanations were suggested regarding the underlying causes of the mental morbidities. Defying those explanations, later studies on the remote mining communities and human lives in extreme climatic conditions do not suggest any linear causal relationship between extreme climatic conditions (Nadkarni and Stening, 1989; Palinkas, no date), harsh physical environment (Burvill, 1975; Neil and Jones, 1988; Neil, 1988), individual personality traits (Palinkas, no date), geographical remoteness of a town (Neil and Jones, 1988; Bramston, 2000) and settlement type (e.g. single industry town or regional city) (Neil, 1988) with the mental morbidity of individuals. Thus, a stressful physical environment in a remote settlement in itself is not a cause of a mental morbidity, but it may aggravate a psychological problem (Neil and Jones, 1988; Neil, 1988; Palinkas, no date).

Isolation from friends and families may, however, generate a state of alienation and anomie among new migrants in a remote area. A study observed that family isolation and kinship support have the largest total (direct and indirect) effects on life satisfaction of the male workers in a remote coalmine (Iverson and Maguire, 2000), and this may cause behavioural problems among newcomers in isolated regions with extreme climatic and stressful physical conditions (Neil, 1988). In the absence of direct, face-to-face support from relatives and long-established friends, local social networks assume significant importance in the wellbeing of newcomers in mining towns. Social networks provide a range of supports to an individual: (1) information support: which provides the person with reassurance and security, (2) emotional support: understanding and sympathy which protect the person from negative effects of stress and restore a sense of wellbeing, and (3) direct help and material assistance: which provide relief and resources (McLanahan, Wedemeyer and Adelberg, as cited in Cotterell, 1984: 102).

Studies of mining town residents suggest that immigrant workers and their female partners do develop common interest social networks that provide a range of services to them (Neil, 1988; Neil *et al*, 1983; Cotterell, 1984). Particularly, women in mining towns develop a small affective social network and they maintain a strong compensatory behaviour (Michel, as cited in Cotterell, 1984: 108) within this network. These relationships lack strong emotional ties because the women still regard their links with relatives and friends back in their hometowns as their basic source of support. The transient nature of the stay in a remote town weakens their commitment to communal values and strong emotional ties with their social networks, as residency in a mining town is regarded as temporary and justified on financial

rather than social grounds. These compensatory behaviour networks and lack of integration of families with their community simply add to one's feeling of marginality and anomie (Cotterell, 1984).

Research suggests that there are certain groups of people who, due to their prior socialisation and backgrounds, find it particularly difficult to socio-culturally adjust in a new environment. For example, a reference can be drawn toward the immigrant Asian women married to the Australian mine workers, who immigrate to Australia as their permanent abode. A study observed that the harshness (of the environment), combined with actual isolation among immigrant Asian women in remote mining towns, exacerbates any feelings of loneliness and homesickness for loved ones, familiar culture, language and religious rituals. Non-English speaking background and culture-specific upbringing limits social interaction, networking and the use of basic facilities and support services (Reeve, 1994). These immigrant Asian women are at a greater risk of mental morbidity, especially when they do not constitute a large enough immigrant group of nationals with a supportive, and hence psychologically prophylactic, socio-cultural milieu (Burvill, 1975).

Research around the world has shown that large-scale mining affects women in indigenous communities more adversely than men (Bhanumathi, 2003; Bose, 2004; Tauli-Corpuz, 1997). In particular, they are largely excluded from employment in mining and are seldom included in negotiations with the industry (Connell and Howitt, 1991; Gibson and Kemp, 2008; Kamble, 2004). In Australia, indigenous women represent only 0.4% of the total mining workforce (Census 2006) — a workforce that is largely non-indigenous and male dominated. Referring to this poor representation of indigenous women in the industry, Parmenter (2008) observes that 'Indigenous women are both Indigenous and female, a double minority in a very unfamiliar environment, experiencing both sexism and racism'.

The lives of the people in the open-cut coal mining towns of the Bowen Basin region have been a subject of early sociological studies. These few early studies made a significant contribution to our understanding of the status and relationship wellbeing of women in the mining towns of the region. In her

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seminal research conducted in 1974–75 — *Open Cut: The Working Class in an Australian Mining Town* — Claire Williams (1981) drew attention to the limited paid-work opportunities for women and on the domestic role overload on the female partners of the mine workers of the region.

Gibson (1992, 1994) also portrayed the conflict of interest of female partners of mine workers with industrial restructuring and their frustrations as housewives with the then fast-rotating work-shifts of their male partners that rendered them overburdened with the household chores. The study suggests that the work done by these women produces more than what is necessary for their own survival, and compares these spousal relationships to that of an exploitative feudal class structure of a society in history. Accordingly, a household (of a mine worker in a mining community) could be regarded as a site of fundamental class process, and household process a feudal class process — a class process in which men (the lords) occupy a feudal class position as direct appropriators of surplus labour in use-form from their women (their serfs) (Gibson 1994).

In recent years scholars have explored the lives and roles of contemporary women in mining towns and in the industry. Linda Rhodes (2003, 2005) has described the lives of female partners of professionals, managers and other workers as unacknowledged silent partners in the industry and added to an understanding of the role played by wives and the direct and indirect corporate exploitation of women’s work. Eveline and Booth (2002) have described the challenges and resistances faced by women mining employees. In an exploratory study of a new mining site in Western Australia on the lives of the mining women of recent times, Mayes and Pini (2008) conclude that the feudal relations that define the lives of the mining women studied by Gibson (1992, 1994) appear remarkably resistant to change.

The available studies inquiring into the lives of contemporary mining women are qualitative with small data sets. There is a dearth in the availability of large data sets that present the status of women in the mining towns of the country and the industry dominated region, and help devise strategies to enhance their status and wellbeing. Using select indicators of gender inequality from the recent census data, the following section describes the status of contemporary women in the coalmining industry dominated Bowen Basin region of central Queensland, and, using select literature, describes the challenges faced by them that affect their wellbeing.

Demographic status of women in the Bowen Basin region (Census 2006)

The global resource industry boom of 1970s resulted in the opening of large-scale, open-cut coalmines in

inland parts of the Bowen Basin region² of central Queensland. Adjacent to mines, several new company towns were built or the then existing rural localities were developed into urban centres to accommodate workers and their families. With the passage of time, administration of these towns was taken over by respective local municipal councils. Over the decades, these towns have emerged as ‘suburbs in the bush’³ with a number of infra-structural facilities available to the populace.

There are 15 towns in the inland parts of the Bowen Basin region that accommodate families of coalmine workers. These are Biloela, Blackwater, Capella, Clermont, Collinsville, Dysart, Emerald, Glenden, Middlemount, Moranbah, Moura, Nebo, Springsure, Theodore and Tieri. In the ABS Census 2006 these towns were classified as Urban Centres and/or Localities (UCL). The economy of the region and the towns is predominantly dependent on the coal industry. For the purpose of this paper the composite population of these UCLs is addressed as the mining towns of the region.

In the Census 2006 the estimated resident population of these UCLs was 44,544 people. It registered an increase of 5.9% from the previous Census in 2001. Seven of the 12 mining towns in Australia that witnessed high annual growth in the population between the censuses of 2001 and 2006 were in the Bowen Basin region (ABS, 2008a).

Of the total residents in the region in Census 2006, 86.7% were citizens of Australia, while 4.2% did not hold Australian citizenship (9% of the residents did not state their citizenship). The total included 3.08% of persons with indigenous status.

Out of the 44,544 resident persons, there were 23,866 males and 20,678 females (Table 1). Of the total of 15,113 females aged 15 or over, 55.9% were married, 2.8% were separated, 6.6% were divorced, 4.8% were widows and 29.8 were not married. These figures for 17,950 males aged 15 or over were 49.8, 3.4, 7.5, 1.2 and 38.0% respectively (Census 2006).

Table 1. Age and sex in the mining towns of the Bowen Basin region (Census 2006)

Age groups	Males	Females	Persons
0–14 years	5,904	5,576	11,480
15–19 years	1,499	1,371	2,870
20–24 years	1,901	1,561	3,462
25–29 years	2,100	1,859	3,959
30–34 years	2,111	1,874	3,985
35–39 years	2,055	1,754	3,809
40–44 years	1,971	1,600	3,571
45–49 years	1,785	1,433	3,218
50–54 years	1,536	1,182	2,718
55–59 years	1,249	838	2,087
60–64 years	714	451	1,165
65+ years	1,041	1,179	2,220
Total	23,866	20,678	44,544

Note: Based on place of usual residence (Census 2006)

Sex ratio in the region

Sex ratio is often used to gauge gender equity in a society. When men and women have near-equal chances of survival, there ought to be near-equal number of males and females in a society. In most developing and underdeveloped countries, a poor sex ratio for women reflects their poor health, socio-cultural and economic status in the society. But for an economically developed country, a sex ratio adverse to women in one of its geographic divisions would demand introspection.

The sex ratio in the mining towns of the region in the Census 2006 was 1.15, (i.e. there were 115 males per 100 females). This was higher than the sex ratio of the State of Queensland (0.98) and the total population of Australia (97 males per 100 females).

The sex ratio for the working-age population (age 15–64 years) of the region was 1.22, while it was 0.99 for the state. Thus, in comparison to men there was a lesser number of working-age women in the region.

The sex ratio for all the working-age groups is unfavourable to women in the region. From a sex ratio of 1.13 for the two age groups between 25–35 years, the ratio consistently went to a high of 1.58 for the age group 60–64 years. In comparison to the age-wise sex ratio for the whole of the State of Queensland this variation was significantly unfavourable to women in the region (see Figure 1). It is further to be noted, and was observed by the Australian Bureau of Statistics (ABS, 2008a), that in the Census 2006 a considerable number of people enumerated in mining towns reported that they usually live elsewhere, such as in a capital city or a regional coastal city. These people are classified as ‘visitors’ to the mining town on the basis of their census form response. Yet many may spend most of their time in the mining town, a nearby mine, or a service centre/town. For this reason, estimates of the usually resident population of mining towns tend to understate

the number of people these towns need to service during any given 24-hour period (ABS, 2008a). Because of the numerical dominance of men in mining and related jobs (discussed in the following section), most of these ‘visitors’ are males. They are commonly referred to as FIFO (Fly-in, Fly-out) workers (Storey, 2001) or DIDO workers (workers who drive to the mining sites from the nearest coastal town, often between 150 and 300 km away, and stay in an inland town close to their work site on their work roster days).

This phenomenon of the numerical dominance of males in the mining towns, many of whom are ‘visitors’, could affect the social capital of the towns. In particular, this leads to a number of implications for the community participation, social engagement and psychological wellbeing of the resident women:

1. Studies suggest that even in relatively safe communities, fear in public spaces negatively impacts women’s lives (Day, 2001). Women are more likely to fear violence from a stranger (Segal, 1996); they are chiefly afraid of physical and sexual attack on the hands of a male stranger (Kelly, 1988; Madriz, 1997; Stanko, 1990). The fear is due, in part, to its centrality in the construction of gender identity for men and women (Day, 2001). This kind of fear among women has been recorded in studies of the mining towns of the region. Gibson (1994) has recorded that many of the mine-town women of the region stay at home because the mining town culture does not provide an acceptable social environment for women alone in public. A recent qualitative study has observed that some women — who have lived in the mining towns of the Bowen Basin region for several years — do not find their (mining) town as safe as it once used to be (Murray and Peetz, 2007).

At the same time, the altruistic fear (Warr and Ellison, 2000) among heterosexual males that their female partners could be victimised leads to

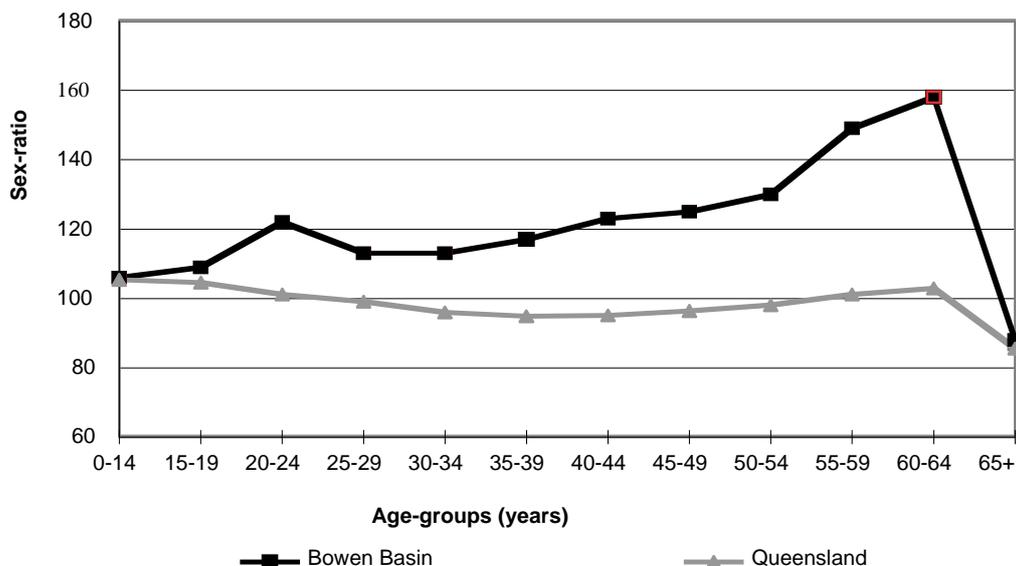


Figure 1. Sex ratio in the Bowen Basin and Queensland

a perceived need of control on the social activities of their 'women'. It also reflects controlling behaviour of men over their female partners suggesting that altruistic fear of crime is a feature of hegemonic masculinity (Kinsella, 2007). It was observed in the towns of the region that men determine and decide as to whom their wives can meet and where they can go, and women accept the male discipline over their behaviour as a fact of life (Gibson, 1994). A reference is also drawn to a recent study on female partner abuse in the region that revealed that nearly 20% of women experience controlling behaviour by their cohabiting male partners on their social participation (Nancarrow *et al*, 2008). These processes limit social interaction and community participation of a number of women.

2. Research suggests that social ties have a salutary effect on mental health and psychological wellbeing (Cohen and Wills, 1985). A study reported that in comparison to rural women, mine-town women have fewer members in their social networks and they seldom have males in their social networks (Cotterell, 1984). The study further observed that the mining women were less socially integrated into their community, had more fragile social networks and were in greater need of social support than their country-town counterparts.

The transitory nature of their stay and financial security gained through higher wages of male partners in mining jobs further weakens commitment to community values among some women (Cotterell, 1984). The 'gossips of a small town' (Nadkarni and Stening, 1989) may also restrict community participation and social interaction of many resident women. Research suggests that smaller social networks, fewer close relationships and lower perceived adequacy of social support have links with depressive symptoms (Cohen and Wills, 1985; Umberson *et al*, 1996). Research also provides evidence that the lower the level of social support, the higher the level of depression (Cotton, 1999; Horwitz and White, 1991). Further, research suggests that in working women with multiple roles, strengthening the use of the support network is important for their wellbeing (Rao *et al*, 2003). Limited opportunities for recreation, social interactions and development of human capital in remote mining towns coupled with the long absences of male partners on 12-hour work shifts in the industry could further compound a feeling of isolation and anomie among several women. However, little is known about the social capital and the mental health of contemporary women living in the mining towns in Australia.

Labour force participation

Workers and their families purposely move to mining towns for employment and/or remunerative jobs.⁴ It

was therefore not surprising that labour force participation was high in the region compared with the state. In the mining towns, nearly 62% (61.8%) of females and 80% of males aged 15 or more years participated in the labour force, while the labour force participation of females and males of the state was 56.2 and 67.2% respectively (Tables 2a, b).

In particular, 67.3% of men in the towns compared with 50.1% of men aged 15 and over of the state were employed full time. Similarly, in comparison to 53.3% of females aged 15 years or over in the state, 59.9% of females aged 15 years or over in the region were employed full time or part time (Table 2a, b).

Of the total males (17,959) aged 15 or over in the towns, 78.8% were employed, only 1.3 were unemployed but looking for work, while 8.9% were not in the labour force. These figures for the State of Queensland were 64.8, 3.0 and 25.0% respectively (Census 2006).

Table 2a. Labour force participation in the Bowen Basin region (Census 2006)

Employment status	Males		Females	
	No.	%	No.	%
Employed, worked full time	12,088	67.3	4,432	29.4
Employed, worked part time	1,039	5.8	3,974	26.3
Employed, away from work*	1,019	5.7	631	4.2
Unemployed, looking for full-time work	173	1.0	163	1.1
Unemployed, looking for part-time work	58	0.3	132	0.9
Not in the labour force	1,591	8.9	4,845	32.1
Not stated	1,991	11.1	923	6.1
Total	17,959	100.0	15,100	100.0

Note: *Comprises employed persons who did not work any hours in the week prior to Census Night and employed persons who did not state their hours worked

Table 2b. Labour force participation in the State of Queensland (Census 2006)

Employment status	Males		Females	
	No.	%	No.	%
Employed, worked full time	761,646	50.1	419,245	26.6
Employed, worked part time	162,449	10.7	368,054	23.3
Employed, away from work*	60,471	4.0	53,135	3.4
Unemployed, looking for full-time work	33,145	2.2	21,996	1.4
Unemployed, looking for part-time work	12,489	0.8	23,315	1.5
Not in the labour force	381,041	25.0	590,792	37.5
Not stated	110,256	7.2	99,963	6.3
Total	1,521,497	100.0	1,576,500	100.0

Note: *Comprises employed persons who did not work any hours in the week prior to Census Night and employed persons who did not state their hours worked

Of the total females (15,100) aged 15 or over in the region, 54.9% were employed, 2% were unemployed but looking for work, while 32.1 were not in the work force.

It is reasonable to assume that because of the structural nature of mining jobs (12 hour shifts and compressed work weeks), female partners of male mine workers with young children find it temporally difficult to undertake full-time jobs, while those who could afford to manage time because of the structural composition of their families prefer part-time jobs. In comparison to men (5.8%), 26.3% of females in these towns were working part time while 32.1% were not in the labour force (Table 2a).

Further, nearly three-fifths of working-age females in the mining towns were either not in the labour force or were employed part time (Figure 2 and Table 2a). This is an indicator of strong commitment of the mining town women to familism (a social pattern in which the family assumes a position of ascendance over individual interests), but it also suggests economic dependence of women on their working partners.

Industry of employment

A majority of males of the mining towns were employed in the mining (47.8%) and construction (10.9%) industries, while only 9.5 and 3.5% respectively of females were in these industries (Table 3).

In 2006, females of the mining towns were primarily employed in retail trade (16.3%), education and training (14.2%), accommodation and food services (13.0%), and health care and social assistance (10.9%). Representations of males in these industries were 4.6, 1.8, 2.6, and 0.9% respectively.

There is thus a clear gender differentiation in the workforce of the region by their employment in types of industries. Most males (58.7%) were employed in

the traditionally male-dominated industries of mining and construction, whereas most of the females (54.4%) were employed in the service industries traditionally associated with their gender (i.e. retail trade, education and training, health care and social assistance, and accommodation and food services).

Nearly one-tenth of working females were employed in mining jobs. Relative to other industries, this suggests acceptance and participation of women in mining jobs. It could not be judged from the available data the nature of jobs undertaken by these women in the mining industry. They could largely be in the low-paying jobs of office assistants/clerks etc. in the offices of the mining companies, as suggested by the statistics of the Australian mineral industry, which indicate that women represent just over 3% of all employees at mine sites and mineral processing operations (MCA, 2007).

This gender divide in the representation of women and men in industries of employment further suggests that thus far there is a preponderance of males in the mining industry of the region.

Representation in occupations

Significantly unbalanced representation of males and females in occupations reflects traditional notions of association of gender with certain occupations, wherein, men were usually associated with 'masculine' mechanical and technical occupations, while women were associated with 'softer' jobs in service industries (Table 4 and Figure 3).

In these mining towns, 66% of male workers were technicians, trade workers, machinery operators and drivers, while only 10% of the female workers were in these occupations. The genders in these occupations suggests a demand and/or possible preference for male workers by the mining and ancillary industry employers. Further, in comparison to 48%

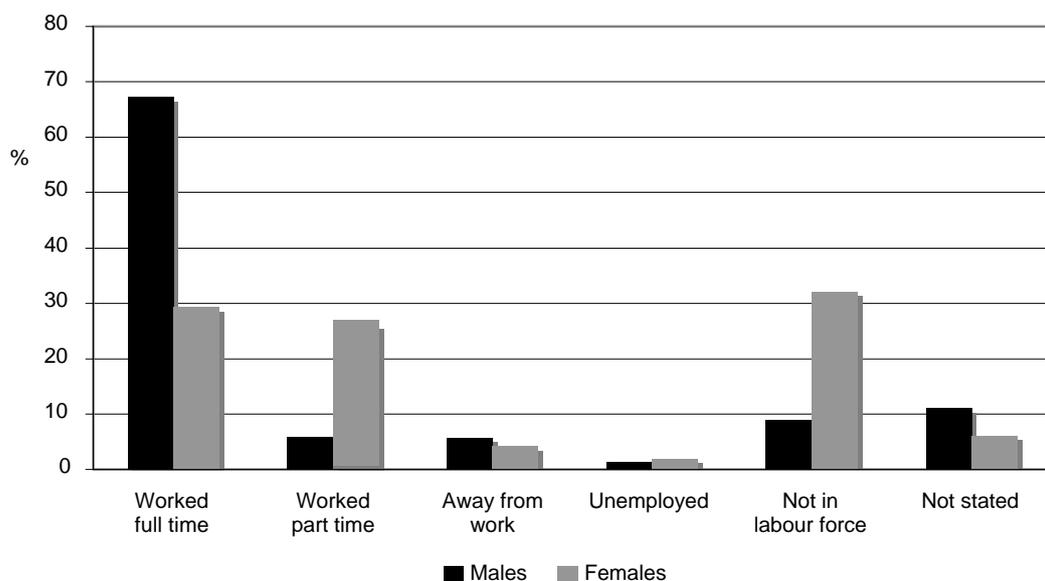


Figure 2. Labour force status by sex, percentages

Table 3. Industry of employment by sex in the mining towns of Bowen Basin (Census 2006 ANZSIC (DIVISION)*)

Industry	Males		Females	
	No.	%	No.	%
Accommodation and Food Services	368	2.6	1,172	13.0
Administrative and Support Services	220	1.6	358	4.0
Agriculture, Forestry and Fishing	268	1.9	122	1.4
Arts and Recreation Services	19	0.1	31	0.3
Construction	1,537	10.9	316	3.5
Education and Training	254	1.8	1,285	14.2
Electricity, Gas, Water and Waste Services	306	2.2	34	0.4
Financial and Insurance Services	60	0.4	226	2.5
Health Care and Social Assistance	121	0.9	988	10.9
Information Media and Telecommunications	44	0.3	45	0.5
Manufacturing	676	4.8	226	2.5
Mining	6,764	47.8	858	9.5
Other Services	530	3.7	372	4.1
Professional, Scientific and Technical Services	233	1.6	310	3.4
Public Administration and Safety	557	3.9	432	4.8
Rental, Hiring and Real Estate Services	148	1.0	179	2.0
Retail Trade	646	4.6	1,471	16.3
Transport, Postal and Warehousing	604	4.3	254	2.8
Wholesale Trade	440	3.1	161	1.8
Inadequately described	187	1.3	90	1.0
Not stated	170	1.2	95	1.1
Total	14,151	100.0	9,025	100.0

Note: *Industry of employment was coded to the 2006 Australian and New Zealand Standard Industrial Classification (ANZSIC). This has replaced the 1993 ANZSIC first edition

of female workers, only 6% of males were in occupations of community and personal service, clerical and administrative service and sales workers. Also, in contrast to 10% of male workers, 15% of female workers were labourers.

This gender divide in occupations in the mining towns reflects the ‘weaker-sex’ image of women in the region, discrimination by several mining employers and the consequent limited representations of women in jobs traditionally associated with masculine gender.

Number of hours worked

In the Bowen Basin localities, most of the employed males aged 15 years or over (65% of 14,155)

worked more than 40 hours a week, while 22.1% of the employed women (9,031) worked more than 40 hours a week (Table 5). Further a majority (57.9%) of the women worked less than 40 hours a week, while only 15.9% of males worked less than 40 hours a week. A similar pattern is observed for the gender differentiation in the number of hours worked in the State of Queensland. Almost 42% of employed males worked more than 40 hours a week, while this percentage was only 17.3 for employed women. Likewise, in comparison to 32.1% of the employed males, 62% of the employed females in Queensland worked less than 40 hours a week.

In comparison to 17.3% of the employed females in Queensland, 22.1% of employed females in the Bowen Basin localities worked more than 40 hours a week (Table 5). There is a lack of knowledge on the demographic and employment characteristics and the composition and functioning of the families of women working long hours in mining communities. Also, little is known about the relationships and psychological wellbeing of women who work extended hours in the atypical work and living arrangements in remote mining communities. Studies are needed to examine the wellbeing of these women, as a Canadian study (Shields, 2000a, cited in Maclean *et al*, 2004) found that women who worked long hours had increased odds of subsequently experiencing depression when compared with women who worked standard hours. In a related study, shift work was also shown to be associated with increase in psychological distress among women (Shields, 2000b, cited in Maclean *et al*, 2004).

Table 4. Occupations by sex in the mining towns of the Bowen Basin region (Census 2006)

Occupation	Males	Females	Total
Managers	1,166	701	1,867
Professionals	1,141	1,457	2,598
Technicians & trades workers	4,486	561	5,047
Community & personal service workers	184	1,066	1,250
Clerical & administrative workers	303	2,112	2,415
Sales workers	378	1,217	1,595
Machinery operators & drivers	4,872	389	5,261
Labourers	1,347	1,399	2,746
Inadequately described/Not stated	275	135	410
Total	14,152	9,037	23,189

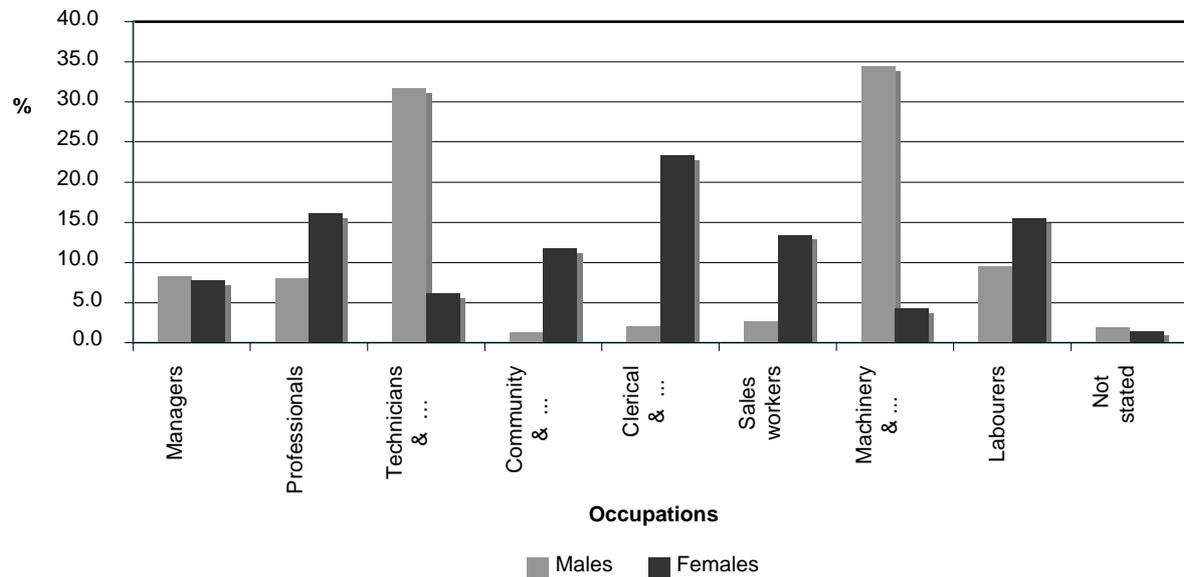


Figure 3. Proportional representation of gender in occupations (Bowen Basin, Census 2006)

It emerges from Table 5 and Figure 4 that in comparison to the State of Queensland, a higher proportion of both males and females of the mining towns work more than 40 hours a week. Further, disproportionately more employed males than employed females worked over 40 hours a week. Studies reveal that long working hours of males leads to domestic role overload for their female partners, in particular the ones who have young children at home (Heiler, 2002; Pocock *et al*, 2001; Murray and Peetz, 2007), and strained marital relationships (Grosswald, 2003, 2004; Staines and Pleck, 1984; Major *et al*, 2002; Keith and White, 1990; Millward, 2002; Simon, 1990), and could have several implications on the wellbeing of female partners (Coumans, 2005; Rhodes, 2003).

Unpaid domestic work

Equal engagement in domestic tasks is one important indicator of gender equity between cohabiting

Table 5. Number of hours worked by employed persons by sex in the Bowen Basin towns and Queensland (Census 2006)

Number of hours worked	Bowen Basin		Queensland	
	Males	Females	Males	Females
None	536	420	30,238	33,270
1–15 hours	444	1,482	58,935	127,956
16–24 hours	265	1,146	42,574	110,483
25–34 hours	328	1,350	60,941	129,614
35–39 hours	1,217	1,251	153,648	154,079
40 hours	1,680	1,190	195,309	119,546
41–48 hours	3,178	832	142,180	65,754
49 hours and over	6,022	1,166	270,509	79,863
Not stated	485	194	30,237	19,861
Total	14,155	9,031	984,571	840,426

heterosexual partners. Traditionally, the principal role of women was one of a housekeeper; men seldom used to participate in domestic chores.

For the first time in the history of censuses in Australia, a question on unpaid domestic work was introduced in the Census of 2006. It relates to people 15 years or over in age and records the number of hours spent in performing unpaid domestic work. It includes work that the person did without pay, in their own homes, for themselves, their family and other people in the household, in a week prior to the Census Night. The question included all housework including meal preparation, service and clean-up, laundry (washing, ironing and managing clothes), gardening, mowing and yard work, home maintenance and repairs, and household shopping and finance management (ABS, 2006). The intended purpose of the data on unpaid domestic work is to help understand the way individuals balance their paid work with other important aspects of their lives, such as family and community commitments. It could also shed light on gender equity between conjugal partners in the performance of household tasks.

The data relating to unpaid domestic work (Table 6 and Figure 5) suggests that a quarter of the males (24.1%) did no unpaid domestic work, compared with a little over one-tenth of the females (11.3%);

Studies reveal that long working hours of males leads to domestic role overload for their female partners, in particular the ones who have young children at home

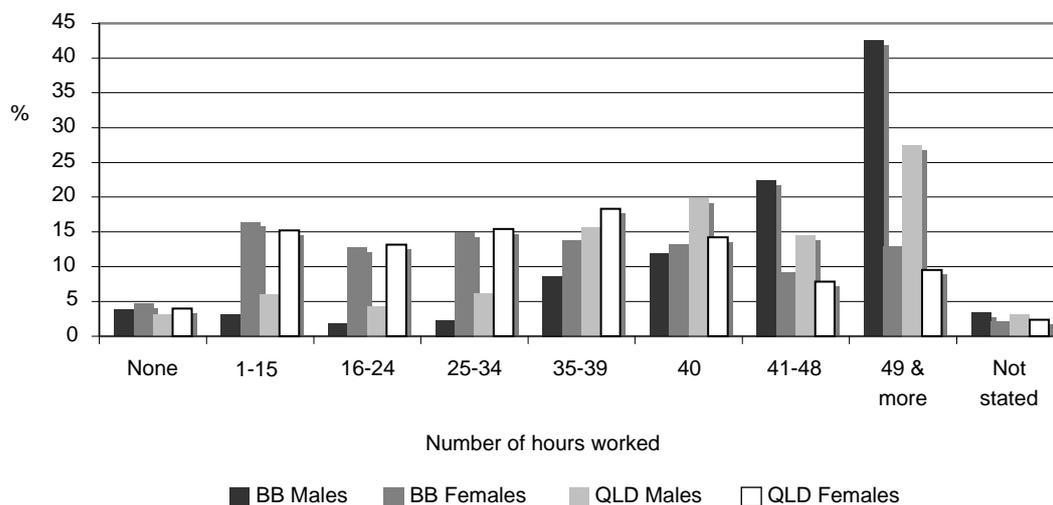


Figure 4. Number of hours worked by employed persons in the Bowen Basin (BB) and Queensland (QLD), percentages

further, 29.1% of males compared with 12.5% of females spend less than 5 hours in unpaid domestic work. Primarily, it was women (25.1%) who reportedly devoted 30 or more hours in the unpaid domestic work (cf. men, 2.5%).

Possible explanations for this relative non- or limited participation of males in unpaid domestic work could include the following. As against 29.4% of females, most males (67.3%) were full-time workers (Tables 2a, b). Most of the employed men (76.9%) as against 35.3% of employed women worked for more than 40 hours a week. Further, 42.5% of working males as against 12.9% of working females worked for 49 or more hours (Table 6). Long hours of work-generated fatigue could limit male partners' participation in domestic chores, imposing domestic role overload on their female partners. Several studies have observed domestic role overload on female partners of mine workers (Collis, 1999; Gibson, 1992, 1994; Heiler, 2002; Pocock *et al*, 2001; Williams, 1981). Role-overload-generated stress could have negative implications on the wellbeing of mine-town women (Sharma and Rees, 2007).

The tables together indicate that there is a marked gender differentiation in the performance of family

roles in the towns, with men primarily performing the traditional role of bread-earner — most working full-time and long working hours, while, females in mining towns are entrusted with and expected to perform domestic chores. In this light, a reference is also drawn to the traditional view of the managements of the mining companies who prefer male workers who are willing and able to work extended or non-standard work hours in the industry. This traditional view regards women as the housewives of the workers and seldom acknowledges the unpaid contributions they make to the industry (Gibson, 1992, 1994; Rhodes, 2003). As Linda Rhodes (2003: 150) observed, the wives of male mine workers are a typical example of a two-person career wherein women in several ways contribute to the work demands of their 'husbands' who work long hours in their jobs. The very structure of the mining jobs and the location of the towns and gendered industrial policies create an occupational context in which women are shaped into a traditional model of marriage whereby their choices, opportunities and autonomy are curtailed and their unpaid labour is usurped for corporate benefit.

Although a large number of males and females in the mining towns were employed, it was primarily women who performed household chores. Orbuch and Eyster (1997) suggest that the marital partner with greater structural resources has more power within the relationship and in decision-making regarding the division of household labour. A similar pattern could be observed in the mining towns where a significant majority of males earn more than females (refer to Table 7).

In the towns, more than a quarter (26.3%, Table 2a) of mine-town women work part time. Australian studies have observed that women who are employed part time spend as much time on unpaid domestic work as full-time housewives (Baxter, 1991; Western and Baxter, 2001). These over-burdened part-time employed women living in atypical cultural and extended work time arrangements of their

Table 6. Unpaid domestic work in the mining towns of the Bowen Basin region (Census 2006)

Unpaid domestic work	Males		Females	
	Number	%	Number	%
Less than 5 hours	5,228	29.1	1,890	12.5
5–14 hours	4,419	24.6	3,759	24.9
15–29 hours	1,002	5.6	2,698	17.9
30 and more hours	494	2.8	3,784	25.1
No unpaid domestic work	4,333	24.1	1,714	11.3
Domestic work not stated	2,487	13.8	1,257	8.3
Total	17,963	100.0	15,102	100.0

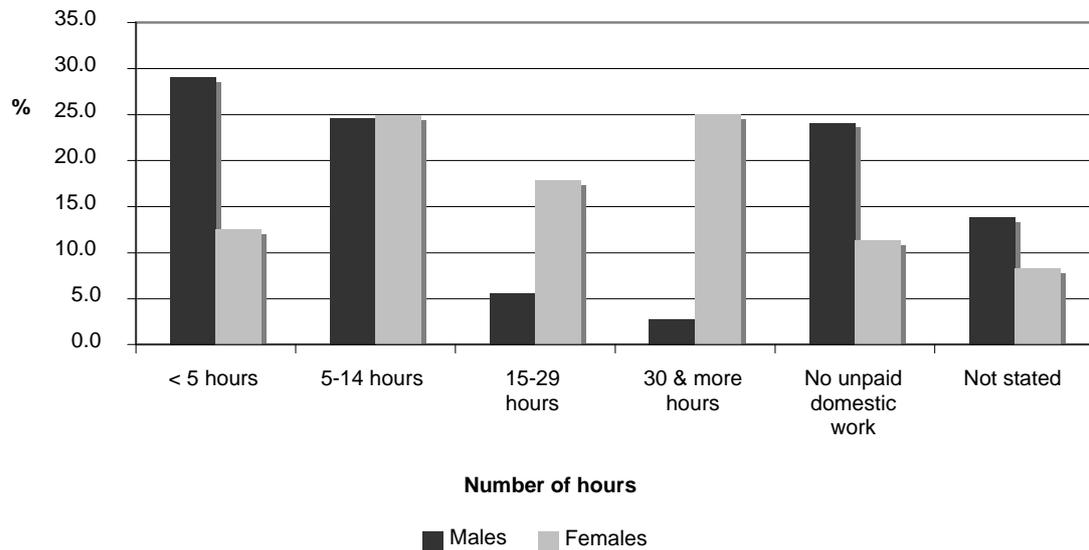


Figure 5. Number of hours in unpaid domestic work (Bowen Basin, Census 2006)

male partners are more likely to experience psychological stress.

Gross individual income (weekly)

A little over one-tenth of the females in the region (11.6%) had negative or nil income, compared with only 2.6% of males. Further, over a quarter of females (25.3%) had a weekly income between \$1 and \$250, while only 6.7% of males were in this income bracket (Table 7).

Very significantly, a majority of males (53.7%) had a weekly income of \$1,000 or more while only 10.8% of women earned \$1,000 or more per week. Further, the weekly median income of males in the towns was \$1,303, while it was only \$348 for females.

Table 7. Gross weekly income of usually resident persons in the mining towns of the Bowen Basin region (Census 2006)

Weekly income	Males		Females	
	Number	%	Number	%
Negative/nil income	484	2.7	1,749	11.6
\$1–149	483	2.7	2,133	14.1
\$150–249	713	4.0	1,686	11.2
\$250–399	739	4.1	2,063	13.7
\$400–599	1,048	5.8	2,378	15.8
\$600–799	1,255	7.0	1,320	8.7
\$800–999	1,190	6.6	867	5.7
\$1,000–1,299	1,849	10.3	811	5.4
\$1,300–1,599	1,681	9.4	392	2.6
\$1,600–1,999	2,505	13.9	224	1.5
\$2,000 or more	3,605	20.1	200	1.3
Individual income not stated	2,413	13.4	1,274	8.4
Total	17,965	100.0	15,097	100.0
Median weekly income (\$)	1,303		348	

The median weekly income of males in Queensland was \$626, whereas that of women was \$373.

The earning (income) ratio between females and males in the region was 26.7%, whereas the income gap was 73.3%. In comparison, the income ratio for the State of Queensland was 59.6% and the income gap was 40.4%.

The large difference in the weekly median income of males and females in the Bowen Basin represents unequal employment and income opportunities for women in the region and the subsequent economic dependence of females on their male partners.

A reference is drawn here to a study in Western Australia that observed that the mining boom in Western Australia has been to women's economic disadvantage. Studies indicate that the mineral boom economy of the state has resulted in a growing gender pay gap (Jefferson and Preston, 2008; Preston and Jefferson, 2007). The income data of the Bowen Basin complements the study. Highly remunerative mining jobs go to male workers, while women find employment in the comparatively low paying jobs of the service sector, resulting in a wide income gap between the two genders.

Discussion and conclusion

Using select variables of gender equity from the Census 2006 this paper observes that women living in the inland mining towns of central Queensland are at a substantial social and economic disadvantage. The paper observes a substantial gender divide in sex ratio, income, household division of labour and the representation and participation in occupations and labour force, with women mostly limited to the roles traditionally expected from their gender. All these factors, individually and collectively, directly or indirectly, promote social and economic dependency of women on their male partners.

It could be argued that primarily due to the structural domain of the mining jobs, many women with family responsibilities fail to undertake full-time jobs. Due to the 12-hour of work shifts of mining jobs, female partners of male mine workers experience role overload and stress (Heiler, 2002; Pocock *et al*, 2001) that could negatively affect the quality of marital relationships of workers (Coumans, 2005; Grosswald, 2003, 2004; Staines and Pleck, 1984; Major *et al*, 2002; Keith and White, 1990; Millward, 2002; Simon, 1990).

A reference is drawn here to the fast-rotating 8-hour work shifts introduced in 1988 in the mining industry in Australia. These were widely protested against by the female spouses of the mine workers and the work rosters were labelled as 'divorce rosters' (Gibson, 1994). Those rosters affected the proper functioning of the families. The contemporary 12-hour work shifts in mining were introduced in 1996. Little is known about the familial and long-term impacts of these long work shifts on the wellbeing of workers and their families. A few Australian studies that inquired into the impacts of 12 hour work shifts (Heiler, 2002; Pocock *et al*, 2001; Murray and Peetz, 2007) on mining communities have drawn attention to the domestic role overload on the female partners of male mine workers. Studies are needed on the long-term impacts of 12 hour shifts in the compressed work week rosters on the wellbeing of workers and their dependents.

Even in modern times of gender equality, it could be argued that the managements of several mining companies practise a traditional view of gender division of roles, and prefer male employees. The 12-hour shifts in mining jobs and the preponderance of males in the mining jobs are examples of this traditional view of employers that limits participation of women in mining jobs and leads to their subsequent socio-economic disadvantage within the household and the community.

In 2006–07, there were 46 coalmines operating in the Bowen Basin region. In coming years, 21 more mines are projected to commence operation in the region (DME, 2006–08). This would further affect the population dynamics of the region and the status of women in the region. The precarious structural positioning of women in the mining communities and households and their exclusion from mining jobs

sustains patriarchal culture and affects their wellbeing (Sharma and Rees, 2007). Policies and strategies are needed to enhance the status of women living in mining towns for their wellbeing. At the same time policy makers and managements of mines should review the current structural arrangements of the job rosters for the wellbeing of workers, their families and communities and for the equitable distribution and participation of either gender in mining jobs.

Due to the higher proportion of males in the towns, and the economic dependence of women on their spouses, many women in mining towns remain confined in the periphery of their households, performing household chores and/or engage in limited social participation in a way sustaining patriarchal relationships within the households and in the community. Further, the cultural landscape of the mining towns in Australia, in particular, has often been portrayed as of masculinity, patriarchy and big drinking by male mine workers (Bulmer, 1975; Collis, 1999; Daly and Philp, 1995; Gibson, 1994; Midford *et al*, 1997; Nadkarni and Stening, 1989; Sturmey, 1989; Williams, 1981). The occupational community of single-industry male mine workers promotes homosocial interests wherein workers often spend their off-work leisure time in the company of their work mates (Bulmer, 1975). These long absences of male mine workers (off and on work) result in domestic role overload on their female partners, compounding their feeling of anomie and stress (Collis, 1999).

Studies have observed that the conditions under which married women showed greater vulnerability to mental illness included lack of social integration, overload of household chores, economic dependency on their husbands, not working in paid jobs, and poor quality of family life (D'Arcy and Siddique, 1985). This paper and the studies on mining communities suggest that women in mining towns are more vulnerable to mental health problems. There is also a dearth of knowledge about the lives and wellbeing of single women (in particular divorced, separated and widowed) and those working long hours in the atypical environments of the mining towns. Women — as a gender — are not a homogenous group of female sex. They comprise females that belong to several social and cultural contexts. However, little is known about the lives of women belonging to various socio-cultural backgrounds and the challenges they face in remote mining communities.

A consideration of gender is a prerequisite for truly sustainable decisions (Goudie and Kilian, 1996). The data and the supporting literature provide evidence that the women of the region are marginalised through several processes. The structures and processes of work, family and community relationships, as suggested by the ecological system theory, have a special significance for the wellbeing of individuals in remote, resource-based communities.

Social impact assessments are needed to monitor and analyse impacts of the structures and functioning

Studies are needed on the long-term impacts of 12 hour shifts in the compressed work week rosters on the wellbeing of workers and their dependents

Social impact assessments are needed to monitor and analyse impacts of the structures and functioning of the mining jobs and the communities

of the mining jobs and the communities. In particular, there is a need for a holistic, interdisciplinary examination of the interplay of work, family and community in remote mining towns to suggest strategies for the enhancement of human and social capital of women in the communities. Social impact practitioners would benefit by accommodating both quantitative and qualitative interdisciplinary research methodologies in assessing the status and wellbeing of individuals and groups — in particular dependents of mine workers — living in remote single-industry based communities. Periodic conduct of SIAs in mining communities could influence policies to promote gender equity in the domains of work, family and community, and help prevent emergence of a cultural ethos in mining towns and regions that works contrary to the wellbeing of women.

Notes

1. The Australian Census of population is administered once every five years by the Australian Bureau of Statistics (ABS). The Census aims to measure the number and key characteristics of people in Australia on Census Night. The most recent census was conducted on 8 August 2006. The Census counts all people who spend Census Night within Australia and its external and internal territories, with the exception of foreign diplomats and their families. It is compulsory for all households to fill in all questions.
2. The region has always remained dominated by open-cut coalmines. As on 30 June 2006, out of the total 46 coalmines operating in Queensland 34 were open-cut, while the remaining 12 were underground mines (DNRM, 2006–07).
3. Djaio and Ng (1987) first used the phrase 'suburbs in the bush' to address the design of the isolated resource towns in Canada. It is used here in a similar way to represent the inland mining towns in the Bowen Basin region.
4. Mining jobs are highly remunerative. The average weekly earnings of the full-time employees in the mining sector at \$1,925.20 were the highest of all industries in Australia in February 2008 (ABS, 2008b).

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