British Columbia's Top Export – An Analysis of the Metallurgical Coal Commodity Chain

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Abstract

This paper was originally written for Rosemary Claire-Collard, GEOG 221, Economic Worlds. The assignment asked students to try and uncover the who, what, where, why, when, and politics of a commodity, from its origins all the way to its place on the shelf where it was bought it. To do this, students were asked to specifically find out where the commodity comes from and where it was produced, research the labour process that goes into producing the commodity, research the distribution of the commodity across space, and identify places along the commodity chain where things tend to break down or conflicts arise. The paper uses APA citation style.

The commodity chain of British Columbia coal extends from the interior of the province, to coastal ports, to global markets and finally into waste facilities or the atmosphere. The coal produced for sale and consumption is predominantly extracted by Teck Resources, who holds a dominant position as the primary supplier of metallurgical coal from British Columbia ("British Columbia coal industry overview," 2019, p. 1). Coal then travels by rail to ports located along the coast, and a large quantity of coal leaves through Neptune terminals, in North Vancouver. The top commodity then arrives in Asia, where it is used primarily for energy production and the construction of steel. The linearity and apparent success of this commodity chain shift the focus away from the damaging processes underlying the chain, which severely impact workers, their communities and the environment.

Coal extracted in British Columbia remains the most lucrative mine-based commodity, representing 58% of all mineral revenue within the province ("British Columbia coal industry overview," 2019, p.1). Mines are operating throughout the province, including Vancouver Island, Peace River and the Kootenays. The Kootenay region in particular is home to high quality coking coal or metallurgical coal, which is a component in steel, and is highly demanded by global markets engaged in manufacturing. The province is a host to a few different mining companies, the most prominent being Teck Resources Limited. Teck is the owner and operator of 5 metallurgical mines operating within the Kootenays, and more

specifically the Elk River region. The Vancouver-based mineral and fuel extraction company has been praised for setting both high safety and environmental standards and paving the way in mining technology. In addition, the company's dominance over the British Columbia industry is clear when examining their total production, comprising 26 million tonnes of coal of the 31 million tonnes total ("British Columbia coal industry overview," 2019, p.7). Another positive sign from the industry is their commitment to occupational safety, as well as their relatively high wages. Teck's payroll expenses consisted of $457 600 000, which we're distributed to 3993 workers in 2013 (Chisholm, 2015, p. 6). This means on average each worker was earning above $114 000 annually, in 2013. In terms of occupational safety, Teck's commitment can be demonstrated by the continuous rollout of new safety training programs, such as Exposure Reduction Plan implementations, which to date have been implemented at 11 out of 12 total operations ("Our Approach to Health and Safety," n.d., para. 12).

However, despite the apparent success of coal mining in British Columbia, this industry's high profits cover a darker story of working conditions. Coal mining is "known to be a dangerous occupation that often inflicts serious injury, industrial disease, and death on its workers" (Kuyek, 2003, p. 2). Safety hazards and consequences are evident in the province's operations as well, with 2 fatalities occurring at Teck owned mines in 2018 ("Our Approach to Health and Safety," n. d., para. 4). Additionally, the company reports extensively on High Potential Incident Frequency, which fell 28% in 2018 ("Our Approach to Health and Safety," n. d., para. 4), but still serves as a reminder of the dangerous conditions that workers face while working in the coal mines. Immediate dangers of mining are one part of the physical risk, the other being long-term occupational diseases. Occupational diseases are of concern to Teck, and some of the diseases they report on include respiratory disorders, hearing loss, cancer, and musculoskeletal disorders ("Our Approach to Health and Safety," n. d., table 7). All of these diseases are demonstrative of the dangers of coal mining and cannot be overlooked even with company implementation of new health and safety plans, as well as training.

Other than the physical working conditions, the mental burden placed upon coal workers in the Kootenays is also notable. While the makeup of Teck employees includes at least 60% local residents for each of its mines (Chisholm, 2015, p. 11), the remaining workers commute in for four days on, four days off shifts (Macleod, 2007, p. 61). This could result in many hours of driving, and limited time spent close to family and friends. With these consequences, it is clear that the extraction phase of the coal commodity chain is harmful to workers and communities. Unfortunately, its capacity to build economic growth has buried the consequences under literature associated with best safety, and environmental practices, innovative technology and continuing economic prosperity.

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Following the extraction phase, coal is placed into rail containers and shipped towards 3 different coastal ports. Of the 3 British Columbia ports shipping goal, the most prominent port is Neptune Terminals, located in North Vancouver. The Director of Marine Logistics refers to Neptune Terminals as a service provider to Teck Resources, supplying the company with a cost-effective and safe transition from rail to ship (Crawford, 2019, personal communication). This statement is reinforced by Teck's 46% ownership of the terminal, and the direct impact they have on revenue of Neptune Terminals, making up 34% of the terminal's revenue in 2014 (Chisholm, 2015, p. 2). Teck's steelmaking coal is transported to global markets, the largest importers being China, South Korea and Japan (Crawford, 2019, personal communication).

Within the port facilities, a variety of labour is involved around the clock. Port workers are onsite 362 days a year, covering 1 of 3 different shifts each day (Crawford, 2019, personal communication). These shifts consist of day, afternoon and graveyard shifts, with graveyard shifts receiving double time pay, due to the graveyard shift being less favoured (Crawford, 2019, personal communication). The nature of working in the port can be dangerous, frontline workers are working with heavy machinery and potentially hazardous substances during their shifts. This can lead to oral hearings and written submissions directed to the Workers' Compensation Appeals Tribunal, which in 2018 saw 24 oral hearings and 231 written submissions coming from workers of the British Columbia Maritime Employees Association ("Our year in review," 2018, p. 28). Key issues of concern for these unionized port workers were loss of wages, retirement, provisions of light duty work and claim acceptance ("Our year in review," 2018, p. 28). 110 claim decisions we're made, a 67% success rate, leaving remaining workers helpless and awaiting further claim review by WorkSafe BC ("Our year in review," 2018, p. 28). Beyond claims, there have been fatalities while on the job at Neptune Terminals. For example, July 2016 saw the death of an ironworker, who fell 8 meters to his death while on the job ("Experienced worker fatally injured in fall at Neptune Terminals," 2016, para. 6). It's these fatalities and worker compensation claims that speak volumes to the nature of work in the industry, raising red flags concerning compensation and overall working conditions.

Once coal leaves the port, it is shipped worldwide, and especially to 3 different Asian countries: China, South Korea and Japan (Crawford, 2019, personal communication). China "is the world's largest coal producer and consumer," making the country a significant market for British Columbia coal. The country uses coal largely for energy generation, which brings about severe health effects on the Chinese population; arsenic poisoning associated with cooking using coal has impacted 3000 residents of Guizhou Province in China (Finkelman et al., 1999, p. 3427). Additionally, over 20 million people within the Guizhou province are suffering from dental and skeletal fluorosis, linked to cooking corn over coal briquettes (Finkelman et al., 1999, p. 3427). China's other

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use for coal revolves around creating steel. Steel factories in Taiyuan, an industrial city have contributed to metal and metalloid elements being found in the resident population's hair. The samples we're disproportionately high for female residents, residing in industrial working-class neighbourhoods (Zhu et al., 2018, p. 544). These metalloids and metals coming from steel factories have been shown to cause diseases including skin burn, belly and neck pain, and neurological disease (Zhu et al., 2018, p. 538). To conclude, coal is a dominating form of energy in China, and a key component in steel, but the social cost of this is immense.

Along all parts of the coal commodity chain, waste management is occurring in order to minimize environmental and safety impacts of coal waste products. When it comes to extraction, coal wastes produced are placed into tailing ponds, remain in waste rock designation areas, or are used in reclamation activities such as backfilling open-pit mines or dam construction ("Approach to Tailings and Waste Management," 2019, p. 2). The tailing ponds pose a significant hazard to workers; the Vancouver Sun newspaper has reported on 49 dangerous occurrences at BC mines in 2014, using data made available to them by the B.C. Ministry of Energy and Mines. The paper reported that the "vast majority of the dangerous occurrences involved incidents with equipment, which crashed, sunk into tailings storage facilities or flipped over" (Hoekstra, 2014, para. 2).

One of Teck's mines experienced an incident that resonated with this observation: "Pat Dwyer died while working at Teck's Fording River mine when the floating excavator he was operating upset in a tailings pond" ("Learning from Loss," 2019, para. 2). Additionally, coal is controlled along the transportation route from mine to port. The tops of rail cars are compacted and sprayed with binding spray to keep coal dust in the car, instead of expelling from the car and becoming wasted materials (Crawford, 2019, personal communication). However, these preventative measures against coal dusting have been proved ineffective by significant amounts of coal dusting particulate matter being measured near the Roberts Bank terminal in Delta (Akaoka et al., 2017, p. 382). With significant air pollution exposure to communities, a question is raised concerning air pollution exposure to rail and coal transport workers. Finally, when it comes to waste management associated with coal consumption, waste control is minimal and the emissions created from coal energy use remain in the atmosphere, contributing to global warming and affecting the global population (Zeng et al., 2013, p. 107).

The painted picture of coal and its inherent economic success in British Columbia should be compared against all the damage and destruction that occurs along the commodity chain. Each part of the chain comes with its own set of hazards, including health risks, the operation of heavy machinery and long commutes to and from job sites. So, when examining this commodity chain, one should ask who is profiting from the coal industry and not experiencing any

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hazards, and if this profit and success is worth the intense suffering of labourers and consumers throughout the coal commodity chain.

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