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ENG3004 Individual Assignment 2

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Question 2: Is electric vehicles (EV) paving the way to a greener future? Each EV Li-ion battery needs 15kg of cobalt and over two third of the world’s cobalt are mined in the Democratic Republic of the Congo. According to this report, 40,000 Congolese children work in the cobalt mining every day. If a spent battery ends up in a landfill, its cells can release problematic toxins, including heavy metals. And recycling the battery can be a hazardous business.

Electric vehicles (EV) have become one of the icons of environmentalism in the modern world. It may seem that EVs are able to protect the environment by reducing carbon emission and fossil fuel usage but this may not be true as the EV’s lithium battery will release problematic toxins when it ends up in a landfill with recycling nearly impossible. Also, some reports suggest that 40,000 children in the Republic of Congo are involved in mining cobalt, a necessary component of producing EV’s lithium battery, which creates some ethical issues. In the following parts, I will analyze the above problem in five perspectives in both positive and negative and state my action or inaction at the end.

In respect to professional perspective, the development of EV has created many new job opportunities that require specific skills and expertise in various sectors like battery manufacturing, electric motor production, and charging infrastructure installation and maintenance. Such a job requires a person to become a professional by obtaining a profession through extensive training and possessing adequate knowledge and skills set. After that, the person will be granted autonomy in the workplace and claim ethical regulation. On the other hand, the children that are involved in the mining of cobalt probably do not possess any profession and are not professional in such areas. Without such a profession, those children may not have any safety knowledge which could jeopardize their own health and safety. Further, the use of child labor affects the company’s corporate social responsibility. Corporate social responsibility means that a company should always operate in ways that could enhance the society and environment instead of negatively affecting it. The mining of cobalt involves child labor which goes against ethical mining and damages the company’s social responsibility. Also, the disposal and production of batteries will impact the environment as toxins may be released which doesn’t comply with the concept of corporate social responsibility and negatively affects the company’s profession.

From an economic perspective, the development in EV has already brought and will continue to contribute to numerous economic benefits. According to research done by The World Bank (2022), the financial benefits brought by the EVs are still substantial even with the up-front 70 to 80% cost premium when compared with fossil fuel vehicles due to the EV’s lower cost in operation and maintenance. Further, EV can also diversify a country’s transportation fleet with a mix of electricity driven vehicles and fossil fuel driven vehicles which can help to ensure a county’s energy security. Moreover, EV can also reduce the cost of fuel dramatically due to the high fuel-to-cost advantage of its components (U.S. Department of Energy, n.d.). However, the high cost of EV and the development of its battery technology are still significant barriers to adoption especially in the low income regions. According to U.S. News (2022), the average price of EV was about $18,000 more than the average price of gas vehicles which will hinder the globalization of EV. As more than two third of the cobalt are mined at Republic of the Congo, this will create a significant risk of supply chain disruption and price volatility which interrupts the flows of goods in case of any events and make the price fluctuate rapidly and unpredictably from time to time.

Regarding the environmental perspective, EV can reduce greenhouse gasses emissions and improve air quality but the impact they have on the environment is still substantial. The production and disposal of EV batteries will cause environmental impacts namely soil and water contamination due to the release of heavy metals and toxic chemicals from the mining process and water related works (Lakshmi, 2023). Additionally, mining of cobalt and other materials would require mass cleaning of mining sites before mining activities start, including chopping down trees and removing grassland which will contribute to deforestation, soil erosion, and even habitat destruction that would jeopardize the earth’s ecosystem. Further, a research study (2021) found that 46% of the EV’s carbon emissions are from the production process while it is only 26% for standard gas vehicles. The research also points out that almost 4 tonnes of carbon dioxide are being released during the entire manufacturing process for a single electronic vehicle which requires the vehicle to be used for 8 years in order to offset the carbon dioxide emissions during production. Companies have the responsibility to ensure their product production should always maintain industry standards and prioritize environmentally sustainable practices at all times to minimize their impact on the environment.

Touching on the health and safety perspective, the reduction in greenhouse gasses emission of EV could improve air quality and possibly reduce climate change in the long term. Even so, many of the cobalt mines at Republic of the Congo are using child labour which is a significant health and safety hazard. A study published in the journal Environmental Health Perspectives in 2018 examined the health impact of long term exposure to cobalt mining emission in the Republic of the Congo which found that the people living near the mine sites had higher exposure to toxic metals like lead and manganese. Also, the research found that children who are living near the mine sites had higher levels of respiratory symptoms and decreased lung function. Further, another report by Amnesty International (2016) found that children working in the cobalt mines are often exposed in dangerous and unhealthy conditions with dust and toxic chemicals which cause many of them to suffer from respiratory and skin problems. Moreover, the disposal of EV’s batteries in landfill could release toxic chemicals like heavy metals into the environment which jeopardize the public health and safety of the general public. Even if the batteries are being recycled, the toxic chemicals will still remain a threat to the environment and workers which make recycling them dangerous and difficult.

As for legal perspective, the use of child labour in the mining of cobalt will raise concerns in many countries as 146 counties have banned child labour including US and Australia (Theirworld, n.d.). The companies should ensure they comply with the local and international laws by ensuring their supply chain are ethical and socially responsible without the involvement of child labour. Further, the release of toxic gasses when mining cobalt may violate local and international environmental protection regulations and the company involved may face criminal penalties. Companies should reduce their impact to the environment by following the regulations and minimize the release of toxic chemicals when mining cobalts in order to safeguard public health and environment. Moreover, proper disposal of these batteries are also necessary in order to comply with the local disposal regulations and prevent the batteries from releasing toxic chemicals and heavy metals into the environment. If the company fails to comply with all of the above regulations, they may face legal penalties and reputational damage.

Last but not least, I will take action if I am involved in this project as it violates many principles and regulations. In order to minimize the environmental and social impact for the production of EV batteries, I will prioritize responsible sourcing and disposal practices up front. This means that I will work with the cobalt suppliers to ensure their mining processes are ethical with no child labour, sustainable, reduce the reliance on cobalt by investing in research for alternative technologies, and develop new disposal and recycling technologies that will reduce the damage caused to the environment. Additionally, safety and well-being of the workers are also critical to protect by following the local and international labor regulations and providing a safe working environment. Finally, I will comply with all relevant labor, environmental, social, and disposal regulations in order to pervert harm to the public health and environment.

Reference

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